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Amateur Radio



September 1998

Volume 66 No 9

Journal of the Wireless Institute of Australia



Full of the latest amateur radio news, information and technical articles, including...

- The new Yaesu FT-847 as reviewed by Ron VK3OM
- Ian VK5QX reviews VK5MIR Operations
- An LF Antenna Bridge designed by Lloyd VK5BR

Plus *lots of other articles, news and special interest columns*

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Cover

WIA Federal President Peter Naish VK2BPN in his radio shack at his home in Sydney.

CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk or via e-mail are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. A pamphlet, "How to Write for Amateur Radio", is available from vk3br Communications Pty Ltd on receipt of a stamped, self addressed envelope.

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The opinions expressed in this publication do not necessarily reflect the official view of the WIA, and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Representing the Australian Amateur Radio Service - Member of the International Amateur Radio Union

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■ Viewpoint

Editor's Comment

Editor's Comment

No, you're not seeing double! The following paragraphs are indeed the Editor's comment on the subject of "Editor's Comments". The desirability of making a few comments has been the result of three things.

First, some criticism of past editorials which have not always been entirely relevant to amateur radio; a criticism which I admit has sometimes been justifiable.

Second, the experience earlier this year of having had three "Guest Editorials" provided for me, so that I didn't have to write them myself.

And third, I couldn't think of a topic suitable for this month, perhaps because of being "spoon fed" in those earlier months!

Maybe I should add a little more to that third point. I think I should retire from the job!

I became Editor of *Amateur Radio* in May 1984, and in May 1999 I will therefore have completed 15 years in the chair, almost equalling the record of 15 years and two months set by the late Tom Hogan VK3HX, from March 1941 to May 1956.

To set a new record I will need to continue until August 1999. Then I would like to retire!

So, in about one year's time we will need a new Editor. Do we have any offers?

Of course, the Editor does much more than just write "Comments", but an appropriate few paragraphs each month play an important part in keeping you, the members of the WIA, informed about what goes on.

I would like to suggest that anyone "out there" who feels so inclined, might write for us a "Guest Editorial" on any topic of interest to radio amateurs.

Ideally, such a "Guest Editor" should be closely connected with Council or Executive (in 1984 the Editor was a member of Executive, as specified in the 1972 Articles of Association, but this was changed some years ago).

Such a connection is not vital, as on any matters of fact, policy or management, the Executive will retain the right to approve or modify if necessary. It seems to me that most Divisional Councillors (including Presidents) and most Federal Councillors and Directors should be able to write the occasional Guest Editorial; but this should not exclude any member who feels editorially inclined.

And, who knows, you might become the next Editor of *Amateur Radio* into the bargain!

Bill Rice VK3ABP

Editor

PS. I don't expect to be killed in the rush!

ar

■ News

WIA News

Prepared, researched and compiled by
David Thompson VK2NH
Federal Public Relations Co-ordinator

"Stop Press" Comment

In the August edition of *Amateur Radio*, there appeared on p 45 a statement from the Victoria Division of the WIA under the heading "Stop Press".

The Federal Executive wish members to know that they have referred back to Federal Council for further consideration the matter of privileges for certain grades of licence that was the subject of a recent postal vote by Councillors.

The Executive are concerned that the motion in its present form has the potential to discourage membership and support of the WIA by a large body of licensed amateurs. In the meantime, action by the Executive on this matter will await the outcome of the Council's deliberations.

[Peter Naish, Federal President]

ar

Prize for Young Outstanding WIAQ Member

Fifteen year old Adam VK4LAD is now the holder of full call VK4AJF, AND has been awarded, in recognition of his diligence, the Fluke Model 12B hand-held digital multimeter, worth \$195.

This is the prize donated by Roberta (Bobby) KB9GKX, a USA WIAQ

member for a **Young Outstanding WIAQ Member**. Roberta Barmore KB9GKX of Indianapolis, Indiana became a member of the WIAQ and picked up the multimeter in the 1997-98 WIA recruitment drive organised by Roger Harrison VK2ZRH.

Fifteen year old Adam VK4AJF was awarded, in recognition of his diligence, the Fluke digital multimeter, at a recent function at Southside Amateur Radio Club.

WIA QNews Editor, Graham VK4BB, presented the award at the clubhouse where along with Adam was his father VK4XYZ and, up from South Australia, his grandfather VK5ETH.

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RF Radiation and Health Safety

It has recently been announced that the Australian and New Zealand Standards Associations have adopted a new "Interim Joint Standard" to be considered by the Australian Government as a requirement for radio transmitter installations. Amateur operators may be interested in this document, AS/NZS 2772.1:1998. It is based on the possible health damage due to the proven thermal effects of RF, while the non-thermal effects on body cells are still being researched.

The problem of possible damage due to RF radiation is a world wide problem. In 1966, the World Health Organisation set up an International EMF Project to research the possible human health effects caused by exposure to Electromagnetic Fields (EMF). EMFs are defined as fields in the frequency range from 0 to 300 GHz. The range has been



A family affair. (l to r) Phil Frankel VK4XYZ (father), Adam Frankel VK4AJF (son) holding the Fluke multi-meter, and Ted Holmes VK5ETH (grandfather).

WIA Call Book 99

On sale next month!

Don't miss out!



"VK3LZ calling!"

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AN ULTRA COMPACT PERFORMER

The IC-T8 is an ultra compact tri-bander that is really generating enquiries from enthusiasts. The unit fits in the palm of your hand yet offers a world of features and amazing worldwide reception. You get ample RF power, tone squelch, a pocket beep 'pager like' function, and much more. Be sure to hear this remarkable unit for yourself at your nearest Icom dealer soon.

IN DASH, TWO BAND VERSATILITY

Another unit creating quite a stir in the market place is the IC-207H offering two band-in-dash versatility, in one compact value-for-money unit. It provides 2m/70cm capabilities, one band at a time, via a band switching system. The front panel is easily detachable, plus you can connect to a pocket modem supporting speeds of up to 9600bps.

Dealer enquiry has been strong so be sure to check it out while stocks are available.

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A warm welcome to the Icom family to Harris Communications, the first Icom amateur dealer in central Melbourne for many years...very handy for those working in the city. Robert Harris has been a licensed ham for 21 years so he has a wealth of experience. He'll be attending as many Hamfests as possible and is planning an impressive mobile display for these events. You'll find his dealership at 78 Elgin St. Carlton, phone (03) 9347 6264 or fax (03) 9347 3629.

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divided into three categories:

- (1) Static Fields (0 Hz);
- (2) Extremely Low Frequency Fields (0 to 300 Hz); and
- (3) Radio Frequency Fields (300 Hz to 300 GHz).

It is this third category which is of obvious interest to amateur radio operators. For those with access to the Internet, the Project's Web site is to be found at <http://www.who.ch/peh/emf/index.htm>.

In the USA, the FCC Office of Engineering and Technology (OET), has done a study of radiation levels in and near amateur radio stations in California. Amateur stations were chosen that represented a variety of antenna and equipment types, as commonly used by amateur radio operators. Measurements of electric and magnetic field strength were made in areas near the amateur antennas and equipment, in order to determine typical and "worst case" exposure levels for amateur radio operators, their families and others, who live or work in the vicinity of these stations.

For frequencies below 7.2 MHz, electric field strength (E), was measured using an Instruments for Industry Model EFS-I field intensity meter. For frequencies above 7.2 MHz, a Holaday Industries Model HI-3001, isotropic, broadband, field intensity meter, was used; a Hewlett-Packard spectrum analyser with dipole antenna, was also utilised. Magnetic field intensity (H) was measured using a calibrated loop antenna connected to a Hewlett-Packard, Model 435B, power meter.

WIA Regulations Examinations

Several new Regulations Examinations question papers will be put into use shortly.

As these will contain many questions which have not been used previously, many invigilators may feel that the papers are harder than those previously in use.

Please be aware that this impression is only because you have not seen the

At most of the stations surveyed, current USA guidelines for field strength and power density were not exceeded in accessible areas. In addition, since the measurements were taken while holding down the key in CW mode, the "duty factor" for normal amateur operation was always exceeded. The highest readings in areas near amateur stations were generally associated with vehicle-mounted antennas.

Commonly encountered field strength readings in accessible areas near antennas and equipment, generally were less than 20 V/m for the electric field and less than 50 mA/m for the magnetic field. For comparison, the USA standard maximum permissible exposure averaged over six minutes, at 14 MHz, is 130 Volt per metre for E, and 1.16 Amp per metre for H (in the 3-30 MHz range the ANSI/IEEE 1992 Standards, are 1842/f V/m, and 16.3/f A/m, respectively, where f is frequency in MHz).

It should be noted that the exposure values are frequency dependent, and therefore the strictest exposure levels are at VHF where, for humans, there is the highest specific absorption rate.

This detailed OET report, which is well worth reading, is obtainable on the Internet at <http://www.fcc.gov/oet/info/documents/reports/HASD-9601>.

The WIA will continue to represent Australian amateurs in the future application of the Interim Australian standard as it affects VK call signs.

[Dr Vince McKenna VK3AOY]

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questions previously. Every care has been taken to match the new papers to existing standards. Any comments or queries should go to the WIA Examinations Committee through the Federal Office. If you do this, please provide a contact telephone number.

[Brenda Edmonds VK3KT, WIA Federal Education Co-ordinator]

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WIA Call Book 99

The essential reference book for all amateurs!

Radio Operators Wanted for the 1998 ISDE

10 - 15 November 1998

WIA Call Book 99

**Every active radio
amateur needs one!**

What is it? ISDE stands for International Six Day Enduro. The ISDE is the largest World Championship motorcycle sport event run under the control of the international motorcycle sport body, the Federation Internationale Motorcycliste (FIM).

Commonly referred to as the Olympics of motorcycling, the ISDE originated in England in 1913. The event this year will be the 73rd one run, only the fourth time it's been held outside Europe, and the second time in Australia. There are expected to be between 400 and 500 competitors - a large event in anyone's terms.

Only registered and insured motorcycles can compete in the ISDE with the event run through State Forests, using existing forest trails, private property and public roads following an arrowed course in and around the Latrobe Valley.

Riders carry a card and clock-in at controls along the route with penalties for being late or early. The ISDE is not a race as the average speed must be no more than 50 kph.

En-route there are usually two or three sections called *special tests* - a single file Motocross, where riders are timed to one-hundredth of a second - this score being a major factor in determining final positions.

The ISDE is an annual test of reliability of the machine and the skill of the rider, comprising six one-day runs of approximately 300 km each, and on the final day a full scale International Motocross.

The 1998 ISDE will be based at Traralgon in Victoria and will have four routes, two of which will be used twice over the six days of competition. It will be a very high profile event with world-wide media coverage and it is estimated it will bring about \$20M into Gippsland.

WICEN has been asked to provide communications for the event, and this will be mainly logistics and safety traffic. It is not planned to use WICEN for

scoring; organisers will be taking care of their own scoring traffic as there is no need to get the scores quickly to the event HQ (unlike a normal car rally).

Each day of the event, the riders will compete over two laps of a 150 km course, and WICEN has been asked to have operators at each Control Point. These are spread out approximately every 30 km over the loop.

A number of operators will be required at the Traralgon Show Grounds from where the event will be controlled, and also possibly to tag medical response teams, the SES or Stage Commanders. It is estimated that about 30 operators will be required each day for the six days of the event.

What sort of country will the event be run in? There will be stages run in the Erica/Boola Boola/Glengarry area, the

Stradbroke sand hills, the Mt Tassie Carrarung area and also Traralgon South.

Most of these areas already have good coverage from existing 2 m repeaters, but it is envisaged that portable repeaters will be established, especially for the Stradbroke area.

WICEN members participating can expect to have some expenses reimbursed. An area has been set aside at Gormandale for overnight accommodation of WICEN members.

If you would like to find out more details, or participate in this rather rare event, please contact John VK3BAF on 03 9546 4947; Chris on 03 5127 5656 (AH), or 03 5135 5503 (BH); or write to WICEN VIC (Inc) at PO BOX 106, Mitcham VIC 3132.

[Chris Morley VK3KME, Region Q Coordinator, WICEN VIC (Inc)]

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TIME TO DEFEND YOUR BANDS AND HARD-WON PRIVILEGES

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■ Equipment Review

Yaesu FT-847 12 Band All Mode HF-VHF-UHF Transceiver

Ron Fisher VK3OM
24 Sugarloaf Road
Beaconsfield Upper VIC 3806

Yes, that's right, twelve bands! All the way from 1.8 MHz through to the 432 MHz band.

Yaesu call it the "Earth Station" and that's a very appropriate name because the FT-847 can operate in full duplex mode for satellite work. Throw in a bit of EME (earth-moon-earth), as well as a full featured HF transceiver, and you start to get the picture.

The transmitter has 100 watts output on all HF bands up to 50 MHz and a healthy 50 watts output on two metres and 70 cm.

Normal filtering for SSB is via excellent ceramic filters but these can be replaced with optional Collins mechanical filters. We will see later just how effective these mechanical filters are.

Of course, this is not the first HF plus VHF and UHF transceiver for Yaesu. Go back a few years and try to remember the FT-767. This was a 100 watt HF transceiver to which six metre, two metre and seventy centimetre modules could be fitted. These modules were sold as options and were not fitted as standard. It had full general coverage receive up to 30 MHz but reception in the VHF and UHF bands was limited to the amateur bands only.

The transceiver was quite large, had a built-in AC power supply and really looked the part. It had a lot going for it, but for some reason it wasn't popular. Perhaps the VHF modules were too low in power at only 10 watts output. Perhaps the whole idea was too early. I don't know.

Well, here is the new FT-767, it's called the FT-847, and I predict it will sell like hot cakes.

FT-847 Features and Facilities

The FT-847 is a compact but not miniature transceiver. It is almost a third of the size of the FT-920 and roughly the same size as the old FT-757 and 747 transceivers. However, it is a different shape.

It is both wider and lower than the earlier models and this, in isolation, makes it appear much larger than it actually is. Finished in jet black (that must be the "in" colour at the moment) with a blue illuminated display, the FT-847 looks very smart indeed. The overall size is 260 mm wide, 86 mm high and 270 mm deep. The total weight is 7 kg.

The FT-847 requires an external 13.8 volt power source rated at 22 amps. As we shall see later, the maximum current drain recorded is 20 amps so your standard 20 amp supply should do the job. All of my on-air testing was done with a Yaesu FP-707 power supply and

this worked very well. My bench testing was done with a Dick Smith D-3800 25 amp supply.

The receiver covers from 100 kHz to 76 MHz, 108 to 174 MHz, and from 420 to 512 MHz. So, in addition to an all band transceiver you also get an almost full coverage receiver.

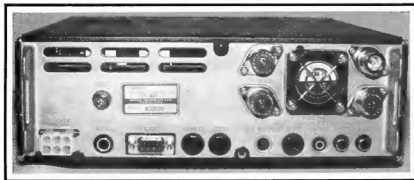
Of course, the transceiver has digital signal processing for the receiver and this works in several different ways. Firstly there is variable digital filtering. Two concentric controls shift the high or low frequency cut up or down the audio band pass. These filters have very steep sides and can really cut interference.

Next is a digital automatic notch filter which can remove heterodynes without the need for manual tuning. For the CW operator there is selectable filtering with band widths of 25, 100, 200 and 400 Hz. There is also a noise reduction setting with adjustable level. To aid all of these in fighting QRM is an IF shift and, of course, those magical Collins mechanical filters for both CW and SSB which are available as an option.

Once upon a time when you bought a transceiver you got a tuning control. Then later they added a clarifier. Later again, with the advent of synthesised transceivers you got variable tuning rates. Well, now you get even more.

The main tuning control has three selectable tuning rates. You can enter frequencies via the front panel key board. There is a VFO channel stepping control. This is mode dependent so you can choose different steps for each. For example you might want 1.0 or 2.5 kHz





Rear panel view of the FT-847. Note the four separate antenna sockets.

steps for CW and SSB, 9 kHz for the AM broadcast band and perhaps 25 kHz steps for VHF FM. Then, of course, there is a good old clarifier although, as we will see later, even this is slightly different.

Then, just to put the icing on the cake, there is Yaesu's wonderful "shuttle-jog-tuning". First seen on the FT-1000MP and then later on the FT-920, this spring loaded ring behind the main tuning control allows for slow, fast and extremely fast scanning up and down the bands. Moving the ring from its central position engages scanning which becomes faster the further the ring is held over. It seems that Yaesu must have a patent on this as it is yet to appear on other makes. It seems that the days of the single tuning control are long gone.

In addition to all of this there are two VFOs and again, carried over from the FT-920, both frequencies are displayed at the same time with the VFO B frequency tuneable independently at any time. As I said with the FT-920, this is not as good as having two receivers but it sure beats the old straight VFO A, VFO B switching.

In order to cope with the wide frequency coverage there are four coaxial antenna feedline connectors, one for HF, one for six metres, one for two metres, and one for 70 cm. The first three are standard SO-239 types and the 70 cm connector is an "N" type which is much more suitable for this frequency. Another nice feature is a dedicated control for a linear amplifier on each of the four band segments.

For the first time in a long time Yaesu are offering a voice frequency read out. I am not sure if they have ever had one on

an HF transceiver before. My research indicates not, but they did have one on the multi-band VHF/UHF FT-736.

The one supplied for the FT-847 is, in fact, the same module. Even the instructions supplied in the box are for the 736. But, no worries, the fitting instructions are explained fully in the FT-847 manual. I seem to remember mentioning in my review of the FT-1000 that this was an obvious omission. Even the HF brother of the 736, the 767, did not have provision for one. Anyway, Yaesu, on behalf of sight impaired operators, thanks!

To help the enthusiastic VHF/UHF operator, Yaesu have provided for 12 volts DC to be fed up the coax to operate a mast head pre-amplifier for both 144 and 432 MHz. This can be switched on and off via the menu. Be sure it's not switched on if you are using an antenna

that is at ground potential such as the popular Ringo vertical.

FT-847 On the Air

The most obvious thing you note when the FT-847 is switched on is the display. It's blue! Not as vivid as the colour advertising photos would have you believe, but quite impressive just the same.

The next thing noticed was the noise of the back panel cooling fan. This runs all the time with a larger internal fan switching on when the transmitter warms up. It's much quieter.

Consulting the menu chart, a few slight changes to tuning rates are suggested and then it's away. Most of the buttons on the front panel are very small and are best operated with a finger nail rather than the finger. Some of them require a fair bit of pressure, too.

The main tuning knob has a rubbery feel but, thankfully, a finger hole has been included. Of course, as mentioned above, there are other ways to zip up and down the bands and, once programmed to your requirements, the VFO/Ch control gets a lot of use.

Audio quality from the internal speaker is satisfactory but a good external speaker does wonders to the sound.

Now to the DSP. The low cut/high cut filter is most effective. This can be switched in and out but, for most of the time, I preferred to leave it in so it could be adjusted at any time. If you have used



The Yaesu FT-847 with the matching FC-20 automatic ATU.

the similarly labelled control on the FT-990 you will note that this one is vastly superior. That's because this one is really digital. The one on the FT-990 was only digital because you used fingers to operate it.

The digital notch filter is also impressive in the way it operates. Pity there is no manual notch filter for CW operators but I guess there is a limit to what can be fitted. Of course, you can overcome most heterodyne problems on CW by using those sharp digital filters which can be taken down to 25 Hz bandwidth. The old reliable IF shift is fitted and this works very well, particularly when used in conjunction with the digital filtering.

The clarifier on the FT-847 needs some explanation. Firstly, there is no offset readout provided which makes it hard to know where you are. If you switch the clarifier off, the offset remains until the main tuning control is changed by one segment. The offset then returns to zero. It takes a while to get used to.

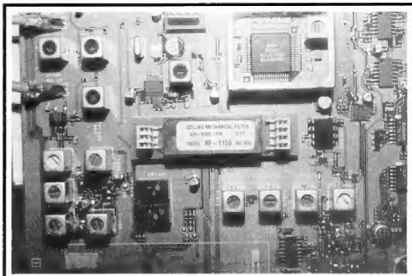
Now it's time to install the Collins filters. As the FT-847 can operate in full duplex mode you need two of these filters, one for the receive channel and one for the transmit channel. Fitting is very easy with no soldering or cutting required. Just remove the bottom half of the cabinet, unplug the ceramic filters and plug in the Collins filters. They can only go in one way so you cannot go wrong. I will leave comments on their performance to John Patterson a little later in the review.

One thing omitted is VOX control for SSB. I must say that I would not miss this at all but I have heard comments from some active DXers that this a drawback when operating in contests with hands-free microphones.

One thing we have become used to in modern transceivers is the memories. The FT-847 has the usual 100 or so channels available.

There are even 12 special memories for satellite operation. There is one (only) quick memory selected and recalled with the two small buttons at the bottom right corner of the front panel.

The scanning facilities are quite amazing. For instance, if you are scanning FM memories on two metres, it is possible to program via the menu the



A Collins mechanical filter plugged into the main board in place of the original ceramic filter makes a worthwhile difference to performance (see text).

scanning to restart 3, 5 or 10 seconds after the signal has gone off. Memory channel one can be utilised as a priority channel which is checked every five seconds. Is there anything this little transceiver cannot do?

For transmit tests on SSB and FM, I used both the supplied MH-31B8 hand microphone and my own MD-1 desk microphone. Both performed very well but in different areas. Most preferred the hand microphone on HF and most preferred the desk microphone on FM. So, that was the way I tended to use them. The RF speech processor was effective providing a small increase in talk power.

It is possible to monitor your own signal via the "Moni" button. Of course, if you want to avoid feedback a pair of headphones is essential, but you will certainly get a good idea of how things sound. This is also handy if you are feeding audio in from, say, a tape recorder or other external source. You will be able to hear what is going on.

One thing noted when operating two metre FM was some slight pager interference when the pre-amp is switched on. Now, I am not in an area where this is normally a problem so the interference might well be worse in a built up area. Switching the pre-amp off eliminated the problem at my location and there was still plenty of sensitivity for normal FM operating.

FC-20 Automatic Antenna Tuner

The FC-20 is a matching antenna tuner for the FT-847 transceiver and covers the HF bands and 6 metres. It is enclosed in a plain but attractive cabinet with a plastic front panel that has a bow window effect. The rear panel has a small cooling fan, an input SO-239 connector and two SO-239 output connectors. The front panel is even more Spartan with one small LED indicator and a very small push-on switch to select either output coax connector. A connecting cable is supplied to run to the dedicated socket on the FT-847.

The ATU is an unbalanced to unbalanced type, that is coax in and coax out. It is not suitable to use with balanced line feeders.

The only antenna I have that I could use to test the AT-20 is an 80/40 metre trap dipole which has a rather high SWR on 20 metres.

The AT-20 coped with this in short time, however there is one small problem. Neither the FT-847 nor the FC-20 has an SWR meter so you will need one in between the two units to see what is going on. The FC-20 is switched from the "Tuner" button on the front panel of the FT-847. The FC-20 is priced at \$649.

I also note that Yaesu have a multi-band mobile antenna available, called the ATAS-100. It is designed to operate on 7, 14, 21, 28, 50, 144 and 432 MHz. The

tuning is motorised with the control voltage fed through the coax line from the transceiver. Sounds very interesting.

FT-847 On Test

Once again I want to thank John Patterson VK3ATQ for his expert evaluation on the VHF and UHF performance of the FT-847. John's report includes a lot of on-air evaluation but I have decided to include it all in the "Test" section to maintain the continuity of his report. Over to John.

The following noise floor measurements were obtained using a noise source traceable to National Standards.

	Pre-amp -	Out	In
6 m	(50.110 MHz)	9.3 dB	6.0 dB
2 m	(144.100 MHz)	3.5 dB	1.6 dB
70 cm	(432.100 MHz)	3.6 dB	1.2 dB

The above noise floor measurements translate to the following sensitivity ratings, assuming an SSB bandwidth of 2.4 kHz:

	Pre-amp -	Out	In
6 m	-130.9 dBm	-134.2 dBm	
2 m	-136.7 dBm	-138.6 dBm	
70 cm	-136.6 dBm	-139.0 dBm	

The sensitivity figures are more than respectable in the case of 2 m and 70 cm, and a little on the low side for 6 metres.

The on-air testing was done using the 50.057 and 144.474 MHz VK7RAE beacons. A/B testing was done using a coax switch in the antenna line to alternate the feed between the reference receiver and the FT-847.

On six metres I was unable to utilise the full sensitivity of the FT-650 reference receiver due to a power line leakage. However, the FT-847 did acquit itself well even if the sensitivity was not quite up to the reference receiver sensitivity (2 dB noise figure).

With the Collins mechanical filters installed, the audio was unbelievably crisper and cleaner than the FT-650. There was no noticeable ringing or hollowness in the recovered audio when using the SSB setting and, when the DSP bandpass filtering was turned on, the overall crispness remained. This is probably due to the combination of the Collins filters having a very low pass band ripple and also a more "linear phase" response. Feeding the unadulterated (filtered by the Collins SSB filter)

IF down stream to the DSP certainly helped the DSP perform better than others I have tested. With the 25 Hz bandwidth setting I did notice some VERY weak (hardly audible) drifting birdies.

On SSB the rig received outstanding reports on the transmitted audio. This was not the case with the ceramic filters installed. The reports with the ceramic filters were that it was "just another rig".

The speech processor, when activated, did very little to improve the "punch" of the signal. Reports from distant stations (400 km plus) indicate that the FT-650 processor is still miles ahead in the "punch" stakes.

On two metres the FT-847 sensitivity was excellent and it performed well ahead of my reference receiver (an Icom IC-275A, noise figure 1.5 dB). Even though there is very little difference in the sensitivity figures between the two rigs, the clarity and crispness of the FT-847 was outstanding and tended to make the same signal much more readable than on the IC-275.

Yaesu have obviously taken a lot of trouble to allocate the gain distribution within the FT-847 as the receiver is very quiet when there is no signal present (ie no audio hiss generated from unfiltered later IF stages and audio stages; also,

the local oscillator/synthesiser appeared not to contribute any noticeable noise).

I did not carry out on-air tests on 70 cm but could probably assume the same characteristics for this band.

All the usual DSP notch and high/low cut filters worked as well as other brands. However, the noise reduction did not produce a noticeable improvement in readability.

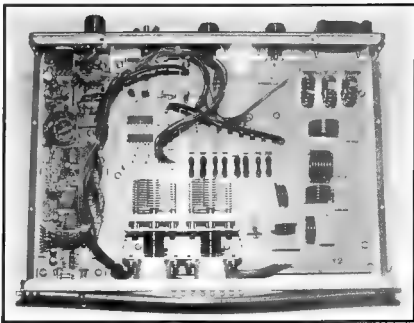
Overall, I would say that this is the first transceiver to come out for some time that I could say was fit for the purpose on VHF/UHF.

Thanks, John, for your comments. Now, on with our usual tests.

First, transmitter power output and current drain, band by band:

1.8 MHz	110 watts	18.5 amps
3.6 MHz	115 watts	17.0 amps
7.1 MHz	105 watts	18.0 amps
10.1 MHz	103 watts	16.0 amps
14.2 MHz	100 watts	19.0 amps
18.1 MHz	100 watts	16.0 amps
21.1 MHz	100 watts	19.5 amps
24.8 MHz	95 watts	20.0 amps
28.5 MHz	97 watts	17.5 amps
29.5 MHz	95 watts	19.0 amps
50.1 MHz	97 watts	16.0 amps
145 MHz	50 watts	11.0 amps
432 MHz	49 watts	12.0 amps

The above figures were taken in the CW mode with a supply of 13.8 volts.



Inside view of the FC-20 automatic ATU.

The same output could be expected in the FM mode. PEP output on SSB would be just a shade higher, ie about 2%.

The next test was to check the transmit intermodulation distortion for SSB. This is the stuff that produces sideband splatter. Better than average amateur receivers should produce figures of around -40 dB. Top quality commercial equipment will do slightly better than this. Let's see how the FT-847 makes out.

The tests were carried out on 3.5, 14 and 28 MHz. Unfortunately, I was unable to check the VHF and UHF bands due to lack of suitable equipment. However, we are working on this. Commercial testing usually gives figures for 3rd and 5th order distortion. My testing cannot differentiate between the two so the figures are the sum of the two:

3.6 MHz	-20 dB
14.2 MHz	-15 dB
28.5 MHz	-15 dB

I suspect that the higher bands would produce similar results. I did find that the figures improved quite a bit with lower power output. However, these figures are, unfortunately, not in the top class.

Transmit SSB frequency response measurements were interesting. Although there is a sharp cut off in the low frequency end, the audio quality was acceptable. It would be possible to change the high/low balance by adjusting the transmit carrier point (Menu No 92 and 93) but I found the default setting produced the best balance using the supplied hand microphone

Receiver Tests

The first test on the receiver was at the audio end. The output impedance of the FT-847 is specified as 8 ohms, so my Marconi output meter was set to this and connected to the extension speaker socket of the transceiver.

Maximum output was 2.9 watts, but with plenty of distortion. The specified output with 10% distortion is 1.5 watts. At this power I measured only 1.25% distortion. The 10% reading did not come up until 2 watts was reached. At a normal listening level of around 100 milli-watts the distortion had dropped to 0.45% which is as low as I have ever measured.

The audio gain control had an unusual characteristic. For the first quarter rotation nothing happened and then the

output came up in steps. The minimum output measured was 2 milli-watts (quite loud into a good speaker); the next step increased 10 dB, then 5 dB and then in 3 dB steps up to full output

For the broadcast listeners out there, I checked the response on AM. This was done with the usual 30% modulation:

100 Hz	-5 dB
200 Hz	-1 dB
300 Hz	0 dB
500 Hz	0 dB
1.0 kHz	0 dB
2.0 kHz	-2 dB
2.5 kHz	-3 dB
3.0 kHz	-5 dB
4.0 kHz	-9 dB

While this might not please a dedicated hi-fi buff, it will, none-the-less, produce quite pleasing audio with a good speaker.

SSB bandwidth was measured with both the ceramic filter and the Collins mechanical filter. It is interesting to note that the Collins had a slightly wider -6 dB response than the ceramic filter. The ceramic filter bandwidth was 2.4 kHz and the Collins was 2.7 kHz. This was possibly the reason for the crisper sound mentioned earlier by John Patterson.

Next, let's take a look at the 'S' meter calibration for the various bands. I have done a complete calibration for 14 MHz and noted the S9 level for other bands:

Meter Reading	Input Required (Pre-amp Off)
S1	2.5 μ V
S3	5.5 μ V
S5	7.0 μ V

S7	25.0 μ V
S9	55.0 μ V
+20 dB	200 μ V
+40 dB	700 μ V
+60 dB	5.8 mV

Now for S9 readings on each band:

Band	Input Required
1.8 MHz	100 μ V
3.6 MHz	85 μ V
7.1 MHz	92 μ V
10.1 MHz	55 μ V
14.2 MHz	55 μ V
18.0 MHz	60 μ V
21.0 MHz	65 μ V
24.0 MHz	60 μ V
28.0 MHz	60 μ V
50.0 MHz	30 μ V
144.0 MHz	40 μ V
430.0 MHz	40 μ V

All of the above measurements were done in the SSB mode. For FM on VHF frequencies the readings are much more generous with decibels about 0.2 of their usual size. Be wary of giving signal reports on antennas to your friends using the normal HF S meter calibration.

Receiver sensitivity was checked and was found to be in excess of the specification right throughout the range. As an old aviator I was very interested to see how the aircraft band shaped up. I loaded a few of the local frequencies into memory and did some A/B switching between the FT-847 and my usual receiver. It was no contest, the Yaesu won hands down. My usual receiver is a Kenwood R2000 fitted with a VHF converter, and a somewhat off-resonance two metre antenna was used

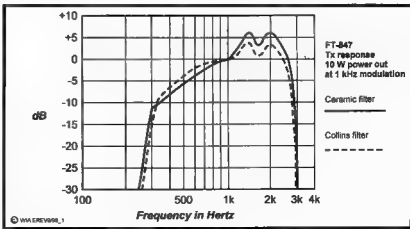


Fig 1 - SSB transmit frequency response measurements.

FT-847 Operating Manual

There is no doubt that Yaesu are producing the best manuals in the business. The FT-847 manual covers subjects that you will not find readily anywhere else.

For instance, there is a chapter on "high-speed CW meteor scatter operation". How about trying a bit of EME operation? All the basics are covered right here in your FT-847 manual. Of course, you will need to be a dedicated VHF/UHF enthusiast to make a start but I am sure there are a few of you out there. Reading this book just might start you off.

There is a lengthy chapter all about the 'Menu' system. However, to simplify things, Yaesu have supplied a laminated concise single-page guide to the menu system. You will be able to keep this handy, perhaps in your log book for quick reference.

Operating and installation are covered in a very comprehensive way and, by the way, Yaesu have supplied a full circuit diagram and a block diagram. Now, if only the book had a better quality cover I would vote it the best instruction manual around.

FT-847 Conclusions

I have to vote the FT-847 the transceiver of the year. It is well in the running for the best transceiver of the decade but we will have to wait a couple of years to find the answer to this one.

The FT-847 is in a class of its own at the moment. At the current price of \$2995 it represents unbeatable value. Just look at what you get. First off, a top line HF transceiver with all mode operation. Next, a tri-band VHF/UHF transceiver with all mode operation, and finally a receiver with coverage from 100 kHz to above 500 MHz.

Add all of those up in separate units and my guess is that you would be spending around \$10,000.

If you do decide to buy an FT-847, do yourself a favour and put in the Collins filters. They are not cheap at around \$200 each but very worthwhile.

My thanks to Dick Smith Electronics for the loan transceiver. All enquiries should be directed to them. I would also like to thank John Patterson VK3ATQ for his help in preparing this review.

■ In the Workshop

A Simple Sheet-Metal Bender

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New Column

Nowadays, we no longer have to build our own radio equipment. If you have the cash, a multi-band transceiver and all the necessary additional equipment (including antennas) may be purchased off-the-shelf. And if you do not have much money, then quite good radio equipment may be obtained second or third hand. So, what's the point of home-building radio gear?

It must be remembered that ours is basically a technical hobby (some might say vocation). It is in our own best interest, and of society at large, that we should have a pool of persons who, in addition to their operating prowess, are skilled in the various branches of radio craft.

Not least of these is an ability to make or repair things. Moreover, time spent in the workshop also offers relief from care, with the pleasing reward of actually producing something of lasting personal value with our hands and brain.

Hence this new bi-monthly column. In future issues we hope to have a look at such topics as metalwork for radio electronics, construction techniques, interesting faults and solutions, making and applying test instruments, photos of member's finished projects (for "show and tell", and to enthuse others), coils, parts sources, etc and, hopefully, re-print some classic articles from other journals.

But please don't make me do all the talking! Let's hear if you have something useful to share. Circuits, troubleshooting tips, photos, tricks of the trade, parts sources. Send them to me at the address shown. All contributions will be acknowledged.

Simple Sheet-Metal Bender

Here are details of a home-fabricated bender which should suit many of the routine light bending jobs around the amateur's workshop. Because of the nature of things, off-the-shelf and scrap

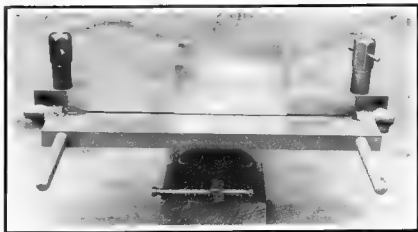
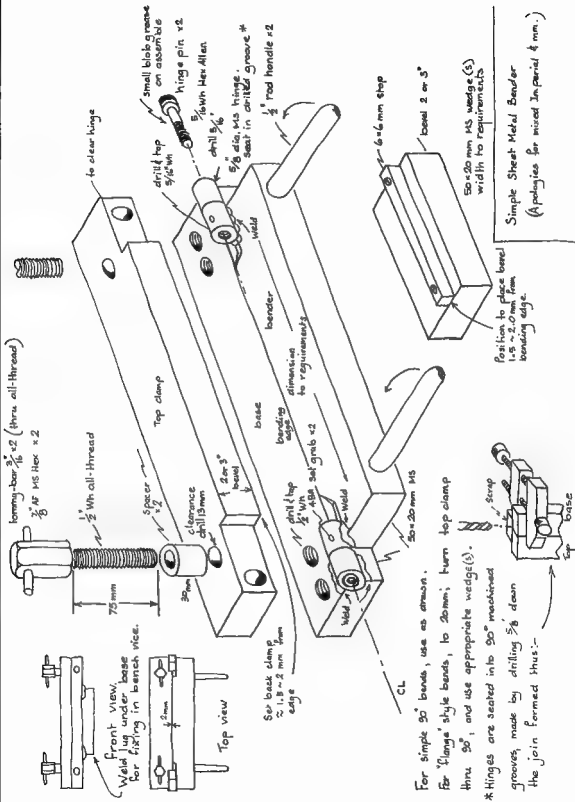


Photo 1 - Plain right-angled bends are obtained by using the top clamp.



box materials for instance, both metric and Imperial measurements are used. I apologise if this irritates you.

A bending width of about 12 inches (305 mm) was chosen because, upon placing a rule to my recent projects it was shown that a bender of that capacity would have done the job. Plain right-angled bends are obtained by using the top clamp as shown in Photo 1, and "flange" style bends, typical in box construction, are obtained by rotating the top clamp through 90 degrees and using an appropriate wedge or wedges, as shown in Photo 2. My wedges are (arbitrarily) 2" (about 50 mm), 4" (about 100 mm) and 8" (about 200 mm), and are shown in Photo 3.

By using wedges singly, or in combination, various widths can be accommodated. For bends that are slightly longer than a wedge, or combination, it is not necessary that the full width of the bend be supported; gaps of less than about 20 mm are not usually a problem. Of course, additional wedges can be easily made as need arises. The complete outfit is shown in Photo 4.

Rectangular section MS bar, 50 x 20 mm, was used for the three main components, which are base, top clamp, and bender. To produce nice sharp corners, the bending edge must bear directly upon the material with minimal gap, so the hinge axis must therefore pass along the bending point. The hinges are made from $\frac{1}{8}$ " diameter MS rod. The segments are each 1" (25 mm) long.

In the lathe, drill two segments to match the shank diameter of your two high-tensile hex Allen bolts - $\frac{1}{8}$ " is suggested. The other two segments are drilled and tapped to suit the bolts. Drill and tap each of the threaded segments as shown for a 4 BA or M5 recessed grub set-screw, which lock and prevent the hinges from loosening during use.

Fabricate the top clamp, base, and bender components as shown in the drawing. To counter the spring effect when bending sheet, the top clamp and wedges should be filed or milled to a slight bevel of about three degrees. Drill the four top clamp bolts to tapping drill size first. Then, to preserve alignment accuracy, align the top clamp onto the base, and "spot-drill" through for the two configurations. The relative position of

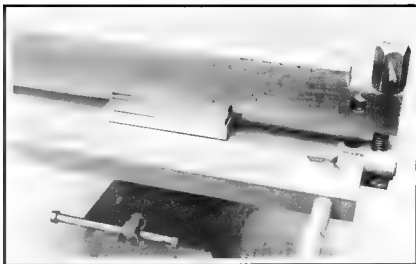


Photo 2 - "Flange" style bends, typical in box construction, are obtained by rotating the top clamp through 90 degrees and using an appropriate wedge or wedges.

the holes is shown pictorially. Actual placement depends upon individual choice, but remember to offset them by an appropriate distance so that they don't clash - 5 or 10 mm is suggested. If using $\frac{1}{2}$ " Whitworth all-thread for the clamp bolts, clearance drill the top clamp holes to 13 mm. Drill and tap the corresponding holes for the clamp bolts in the base.

I don't have a mill; so, how to machine the seats for the hinge segments? The answer is to use the drill press. The top clamp, base, and a scrap of the 20 x 50 bar is firmly fixed with engineer's clamps (shown in the drawing) and an additional G-clamp (not shown) at right-angles to the engineer's, and the assembly is clamped to a right-angle bracket fixed to

the drill table which is moved to one side. The bottom of the assembly must rest upon the lower drill table. Use suitably sized chocks if necessary.

Carefully check that the assembly and drill axis are truly in-line. In stages, drill to $\frac{1}{8}$ " diameter, 2" depth to accommodate the hinge(s). The additional depth of the seat cut-out (which, perforce, results in the bender component) may be used to advantage later as an extra place to weld, and thus improve the strength of the hinge. Drill the holes for the two handles, which may be welded, or preferably, interference-fitted into the bender.

When ready to weld the hinge segments, align and clamp the hinge assemblies, complete with hinge bolts

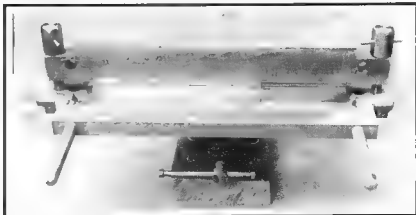


Photo 3 - My wedges are (arbitrarily) 2" (about 50 mm), 4" (about 100 mm) and 8" (about 200 mm).

inserted (dry) into the base and clamp as shown. Tack-weld the segments first, then test that the bender operates smoothly through 93 degrees. If satisfactory, weld the segments in position. Keep in mind at all times which parts need to be able to rotate and come together in operation.

The heads for the clamp-down bolts are made from $\frac{7}{8}$ " AF hex MS. A length of about 2" (50 mm) each is suggested. In the lathe, drill tapping size to about $1\frac{3}{4}$ " (45 mm) depth (that is, not right through). Tap to suit your all-thread. Now, with the all-thread fitted; clamp the job in a machine vice, then cross-drill, through the head and all-thread, to accommodate the tommy-bar as shown. Hint; drill a small pilot hole first, then follow with a drill which is just one or two thou under the diameter of your tommy-bar.

Now, from one side, with a drill of exactly tommy-bar diameter, drill to a depth about 3 mm short of half way (use the depth-stop on the drilling machine to prevent the drill going too far). Reverse the job and do the same from the other side of the head. Drive the tommy-bar through the hole. The under-size segment in the middle will hold the tommy-bar firmly in place, and also prevent the all-thread from turning in the head. In actual operation, a $\frac{7}{8}$ " AF spanner should be used to pinch up the clamp bolts after hand tightening.

The two 1" (25 mm) spacers are optional. Without them, in plain bending there would be rather a lot of thread projecting below the base, so a pair of spacers saves adjustment time. In the lathe, drill to all-thread clearance (13 mm) for each spacer.

Weld a suitable lug onto the underside of the base for fixing the bender in your bench vice (but please read-on). Upon assembly, apply a blob of grease to the shanks of the hinge bolts. Pinch up the hinge bolts just sufficient to obtain smooth operation consistent with minimum lash. Now tighten the hinge set-screws. Place one or two centre punch marks immediately adjacent to the set screws to cause some hinge metal to spread across the top of the grub, thus locking them in place.

As mentioned, the wedges were chosen to suit my past and projected

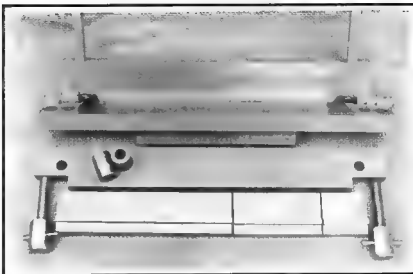


Photo 4 - The complete sheet-metal bender outfit.

work. However, they may be made to any reasonable preferred height and width, depending upon your particular application. The stops are necessary to restrain the wedges from being forced backwards during bending; the clamp alone is incapable of preventing this undesirable effect. The stops may be fixed with screws (as shown), or welded on the front side.

A couple of things that I wish I had thought of during construction. Most of the aluminium and brass I bend is in the range of perhaps 1 to 2 mm. As you can see, there is no adjustment for material

thickness. In the wedge configuration, two ranges of thickness may be had simply by off-setting the top clamp bolts by an appropriate amount, and turning the top clamp around in actual use. Secondly, the vice lug under the base could be made to extend the hull length of the base, thus providing extra strength, and resistance to bowing of the base during heavy bends. But note, do not weld the full length of the lug, just apply three or four equally spaced welds, otherwise the base may be distorted.

Finally, a safety hint: Once, when lifting the machine out of the vice, the

bender accidentally flopped down and closed on my fingers, which naturally were underneath. No damage was done, but it hurt a bit. When inserting or removing the device therefore, make sure that the bender is in the down position, and keep fingers away from the bending edges.

This project was first published in Journal #44 of the Melbourne Society of Model and Experimental Engineers.

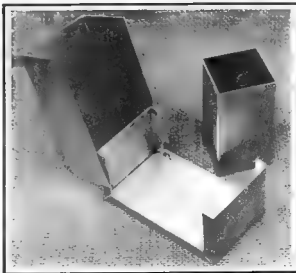


Photo 5 - Some typical boxes.

■

■ Technical

Technical Abstracts

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Stripline Directional Coupler

In *VHF Communications* Volume 30, 1 1998, Gregor Storz ZL1GSG/DL2GSG described a stripline directional coupler for 400 MHz to 3.6 GHz.

The coupler used ordinary FR4 PCB laminate in a triplate configuration. Two of the pieces of laminate were used as ground planes with the middle layer having the coupler lines etched on it. A backing plate of 2 mm thick aluminium was used.

The coupler is an asymmetrical design and is shown in Fig 1. The terminating resistors are SMD components. The outer board must be ground away where the resistors are located on the middle board. This is to provide space for the terminating resistors.

The structure of the triplate is shown in Fig 2. The coaxial sockets must have only thin dielectric on the flange side. The discontinuity between the connector and the stripline must be minimised.

The earth contact for the resistors is soldered on all three layers. Each resistor has an earth contact. The resistor earth contacts are pieces of wire which are soldered to each layer of the triplate. There is a row of screws along each side of the coupler assembly used to clamp the assembly and provide connections between the earth planes. The coupler circuit board before assembly is shown in Photo 1 on the next page.

The circuit boards are FR4 2 mm thick. All lines lie on a 5 mil (0.005") basic grid. The lines are 56 mil wide and the coupler segments are 690 mil long. The entire coupler is 88 mm wide. The coupler lines intervals are S1 = 175 mil, S2 = 140 mil, S3 = 120 mil, S4 = 100 mil, and S5 = 85 mil. The gaps are 119 mil, 84 mil, 64 mil, 44 mil, and 29 mil respectively.

The coupling from port 1 to 3 is 20 dB from 400 MHz to 3 GHz, and is ± 1 dB. This is shown in Fig 3. The directivity from port 2 to 3 is 18 dB or better from 400 MHz to 2.5 GHz, and better than 14 dB to 3.5 GHz (Fig 4).

Matching of ports 1, 2, and 3 is shown in Fig 5. Return loss is 16 dB or better from 400 MHz to 2.5 GHz, and 13 dB or better to 3.5 GHz.

Short Component Leads

A tip for using replacement components with short leads

appeared in the *In Practice* column of Ian White G3SEK in the January 1998 issue of *RadCom*. The idea came from JA4BLC who described replacing GaAsFETs in pre-amps with modern short-lead-length components.

JA4BLC mounted the modern replacement FET on a small carrier board which was then soldered in place of the old FET in the pre-amplifier. The board used was a carrier board 5 mm x 10 mm made from single sided Teflon PCB. The board can be cut with scissors and the required tracks separated using a sharp knife to strip off the copper between tracks. The board is then soldered in place of the old FET. The new GaAsFET is then soldered in place on the carrier board. The carrier board is shown in Fig 6.

Through Board Connections

Connections from one side of a printed circuit board to the other can be troublesome. Modern boards use plated-

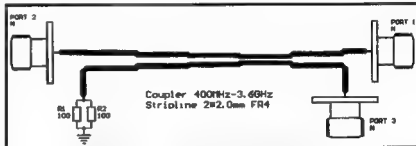


Fig 1 - Wiring diagram of the asymmetrical stripline coupler.

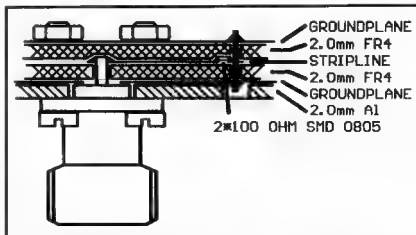


Fig 2 - Structure of triplate with aluminium ground plane, mounted N socket, and soldered-on SMD Resistor.

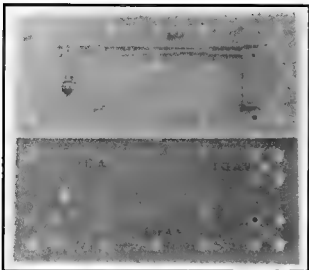


Photo 1 - Coupler printed circuit board before assembly.

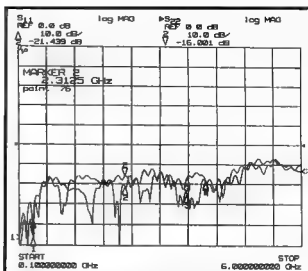


Fig 5 - Matching of ports 1, 2 and 3. 400 MHz - 2.5 GHz Return Loss ≥ -16 dB. 400 MHz - 3.5 GHz Return Loss ≥ -13 dB.

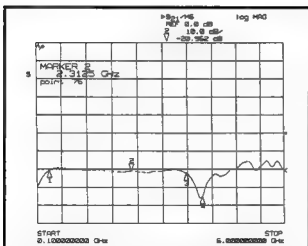


Fig 3 - Coupling port 1 to port 3. 400 MHz - 3 GHz = 20 ± 1 dB. Marker 1 = 400 MHz. Marker 2 = 2.31 GHz. Marker 3 = 3.5 GHz. Marker 4 = 4.0 GHz.

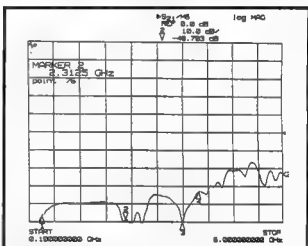


Fig 4 - Directivity port 2 to 3. 400 MHz - 2.5 GHz ≥ -18 dB. 400 MHz - 3.5 GHz ≥ -14 dB.

through holes which are much better. Old printed circuit boards use pins or even component leads to connect between tracks on opposite sides of the board.

Unfortunately, this can lead to troublesome intermittent connections.

In the *Technical Topics* column of Pat Hawker G3VA which appeared in the July 1998 edition of *RadCom*, a neat way of providing a through board connection was described. The technique was used by G4IBS to replace vias, or through board connections, in older equipment. G4IBS had experienced some tricky intermittents prior to developing this

technique. The technique minimises stress on the wire link used (see Fig 7). The wire is bent as shown and this should minimise the stress due to differential expansion. The bending is more complex but should be responsible for fewer problems.

Simple Output Indicator

A simple output indicator for a Ten Tec transverter, which could be used in other equipment, was described in the *Hints and Kinks* column of Bob Schetgen KU7G in the May 1998 edition of *QST*. The idea came from Roger WA0VLL.

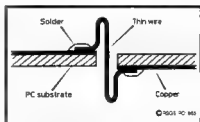
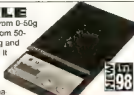


Fig 7 - Via for non plated-through holes in circuit boards.

Roger mounted a small coil connected to an LED close to the output of the transverter. The coil picks up the RF output and lights the LED. Rather similar

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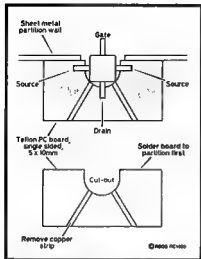


Fig 6 - Carrier board to support short-leaded GaAsFETs.

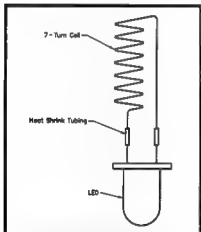


Fig 8 - LED and sense coil.

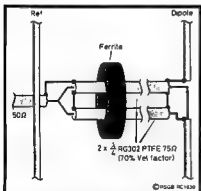


Fig 10 - 144 MHz three element beam matching using a ferrite balun and parallel coaxial matching sections by GW4HBZ.

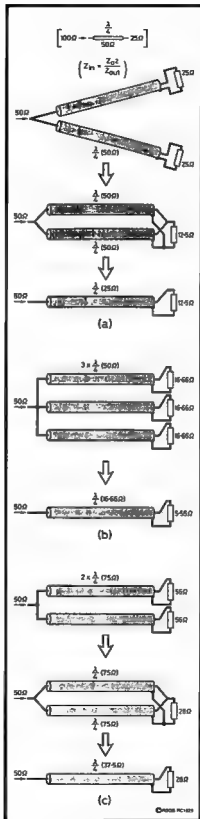


Fig 9 - Using parallel cable lengths for matching.

to the soup loop pickup which old timers used.

The LED and coil are shown in Fig 8. The loop and coil are mounted close to the output of the transmitter. Spacing and orientation must be experimented with so that the LED glows brightly at full output.

Quarter Wave Line Matching

In the *Technical Topics* column of Pat Hawker G3VA in *RadCom* for June 1998, an interesting use of quarter wave matching was described by Brian Clowes GW4HBZ. Brian showed the use of paralleled coaxial quarter wave line transformers to match impedances. This technique allows the use of standard coaxial cables to match a wider range of loads.

The technique is shown in Fig 9. A quarter wave section of 50 ohm cable can be used to match 100 ohms to 25 ohms. Paralleling gives a match of 50 ohms to 12.5 ohms. This is shown in Fig 9 (a). Similarly, in Fig 9 (b) three parallel sections are used to give a match of 50 ohms to 5.55 ohms. In Fig 9 (c) 75 ohm cable sections are used to match 50 ohms to 28 ohms.

In Fig 10 the use of the match of Fig 9 (c) is shown being used to match a Yagi. An added refinement is the use of a ferrite sleeve around the matching sections to act as a current balun and achieve a balanced feed.

The technique is capable of further experiment with additional range being possible by using a mix of 50 and 75 ohm cables. The matching should be simpler and less touchy than some of the alternatives, such as tuned matching units and gamma matches. The use of bridge type SWR matching devices, such as the MFJ and Autek units, should give suitable load values on which to base calculations.

WIA Call Book 99

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■ Repeater Link Computers, Ugh!

(part 2)

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Packet VK6UU@VK6BBR
E-mail will@vale.faroc.com.au

Great Fun But!

Computers most of the time are great fun. They can work well without trouble, but when they give trouble it can be a most frustrating and challenging experience that chews up vast amounts of time. It is simply because computers are so useful that when they play up it causes such a major hassle.

For the non computer user the comment "I'm having computer trouble" may mean little. So, what does it mean? For me it all started after I saw a demo of a computer game played with the addition of a graphics accelerator card. This is the latest add-on to computers and increases the speed of 3D graphics many times over. The moving 3D pictures are so smooth, well textured and light years ahead of a computer without a graphics accelerator card. Once seen, you have to have one to play games written for these cards. So started my particular computer problems with a touch of the X Files.

What follows is a very brief description of several weeks of frustration and disbelief. To go into all the detail would take up far too much space. There are two computers involved, a Pentium 100 and a Pentium II 266, both running Windows 95 as the operating system.

Card 1

Accelerator card number one was purchased and installed in the Pentium 100 and worked for three days. Then games requiring the 3D card would not work. The computer worked but not software requiring the accelerator card. I had changed nothing within the computer.

Often, when faced with this type of problem, the standard approach is to

remove the program software that is not working and re-install it. This generally fixes the problem but, in my situation, it did not.

Re-installing the games had no effect. Next I discovered in 'Control Panel' that the 'Display' icon would not work. A message "Can not open Desk.cpl" was the response when clicking on the 'Display' icon. I then removed the software (drivers) for the accelerator card. The 'Display' icon worked again.

I now knew the problem was with the accelerator card. It is normal to suspect the installation of the software or its configuration. I downloaded the latest drivers for the card from the Internet but still no go. All sorts of software changes were tried, some of them compounding the problem.

It is not unusual, after trying to solve a problem with a computer, to be worse off at the end of the day compared to when you started. It can be dangerous to know enough to fiddle with a computer and I was causing more problems than I was fixing. You sometimes get to such a point of frustration that starting from scratch appears to be your only option.

Big 'Format C Drive'

The big 'Format C Drive' was done. This erases all programs and data from your computer and is only done as a last resort.

You cannot just remove the operating system (in my case Windows 95) and then re-install it, as all Windows programs, like your word processor, share common files and it is very difficult to sort out what belongs to what. Data, like CAD drawings and letters, etc can be saved onto floppy disk, but programs have to be re-installed.

It is most important to save all the information you will require to set up your computer again, such as your Internet configuration.

To reload Windows 95, set up the computer and reload all the software, and the software for the peripherals such as printers and scanners. This can stretch over a few days. Yes, several days!

If you are not doing this often it is a re-learning process. For example, I took several hours to configure my monitor back to 800 by 600, all because I'm not all that bright and the method I kept trying was wrong. Once I found out what I was doing wrong it only took a few minutes.

I'm trying very hard not to say too much about Windows 95 and the way I interact with it. But, to get it off my chest, I do like the concept but why do I find it so difficult and frustrating? The help information is little or no help to me. Where I get lost is not knowing which of several set-ups (all of which could be relevant) is the right one, or which combination is the right one.

I'm sure that people who write computer help files never try them out on the average computer user. I often get lost at step one. OK, that said, let's move on.

After many hours the computer hard disk was rebuilt but still the graphics accelerator card would not work! It was looking like the card was faulty. A quick trip to a friend's computer gave the same results. I returned the card under warranty and awaited a replacement.

Modem Problems

To say the computer was fully working is not quite true. I was having problems with my Internet set-up.

I could connect to my service provider, load the browser and all appeared to be working. However, the first download page stalled. It started to download but then stopped. The modem just sat there.

Having just re-built the computer it was obvious I had not set up my Internet connection properly. Try as I might I could not get it to go past starting to download where it stalled. Could there, by coincidence, be a problem with my service provider? A phone call to a friend who uses the same service provider confirmed that he too was having problems similar to mine.

What bad timing, but at least it was not my computer. However, to be sure, I contacted another friend who also used the same service provider and, yes, he too was having problems. I rang the service provider and they said there might be a problem but did not think so. They would look into it.

Time went by but still no Internet. I had arranged with a friend to play a computer game direct, phone line to phone line, no service provider, and I had similar problems. The game connected, started and then stalled!

So it was not my Internet connection but a problem with my computer. This situation goes way back to having the need for two extra COM ports on my computer, COM 3 and COM 4. I could never get them to work properly but, with the rebuild, they appeared to work (yes, I know about interrupt conflicts, etc!).

I had connected my modem up to COM 4 and this was the problem. The computer said COM 4 was OK with no conflicts, and COM 4 would dial via the modem and connect but, after a short time, grind to a halt. The solution, return to using COM 2 and leave the COM 3, COM 4 problem for another time. But all this wasted many days of frustration.

So, how come my two friends were having similar problems with their Internet connection with the same service provider? Just sheer coincidence! Their problems were not related at all. What dumb luck. Talk about a red herring!

Computer 2 Card 2

Now, so far what I have described hopefully has been entertaining but nothing unusual. This is where the X Files could take up the story.

By co-incidence I was, while having the above problems, buying a new computer, a Pentium II 266. The graphics accelerator card in the Pentium 100 is version 1. I decided to have installed in the new computer the next, just released, version 2 graphics accelerator card. Same manufacturer, but a later model with completely different chips. I have read this card is able to do 50 billion operations per second. I find this hard to believe but I gather the speed of the card is fast!

The new accelerator card worked for about four days and then it worked no more! I was stunned, to say the least! It

must be a software or configuration problem, I thought. Surely it could not be another faulty card.

After much playing around, as before, I discovered the 'Display' icon in 'Control Panel' would not load. Up came a message "*Mutual exclusion prohibits this*". After much more playing around, sometimes I could make the card work, but only for short times. Many hours later I gave up and returned the computer under warranty.

Oh Dear, You Have the 'A' Version, Sir!

The computer company confirmed that the accelerator card did not work and, after much playing around, came up with the idea that it could be Windows 95 A version. To save costs I had required my A version of Windows 95 to be installed onto the new computer.

So, what was wrong with the A version? The answer from my computer man was that it sometimes made mistakes when installing PCI cards. The graphics accelerator card is a PCI device and it did appear, when looking under 'System', that two PCI cards were loaded, one my card and another one that the computer knew was a PCI device but not what type of PCI device. This it listed under 'question mark'. This causes a conflict for the computer and the end result is it does not work.

What was the solution then? Removing the unknown PCI device only worked until the computer was re-booted and it proceeded to find the new PCI device and re-load the device under 'Unknown'.

The solution was to remove Windows 95 A version and install Windows 95 B version. This was at a cost to me but I appeared to have no choice. I gave the go ahead and returned the next day to watch the last of the drivers being loaded. Now came the big test. The 'Display' icon was clicked on and up came "*Mutual exclusion prohibits this*". The computer man uttered a few expletives and then fell silent. After a few moments he added, "*I have no idea what the problem is, perhaps the graphics accelerator card is faulty*".

The next step was to swap the card in my computer. I left the shop to await the outcome. A phone call the next day confirmed the card in my computer was

faulty. At long last, a conclusion to the frustration and time wasting of the past few weeks. But how could I be so unlucky to have purchased two different model graphics accelerator cards installed in two different computers at different times and have both fail after about the same time? This remains a mystery but, so far, both cards are still working.

The Manufacturer

An interesting addition to the story is the e-mail correspondence I had with the graphics accelerator card manufacturer.

Many companies run Web pages with the latest software drivers for their products, along with questions and answers to many problems. You can e-mail the company and, after receiving a couple of standard automatic replies, you receive a reply from a real person about your problem.

I received two responses. The first mentioned that these cards can overheat and recommended I take the side off the computer and blow a fan through the computer. I did not see this as a good solution and did not believe the card was overheating, it being mid winter for starters. I replied with these comments and received the following. "*Yes, these cards can overheat in as little as 0.5 of a second!*" Yes, that is right, half a second! Even before the computer has done its POST (power on system test) the card is too hot to work. What rubbish. I'm drafting a reply to the manufacturer.

Conclusion

I hope you have found the articles interesting on what having a computer problem can mean to many computer users. I have about a dozen more, all from personal experience, and may share one or two from time to time. Many computer problems are so simple to fix when you know what the problem is. For example, a friend found his sound stopped working on his computer one day. After a couple of days of frustration I was able to suggest that perhaps the sound had been muted in the sound set-up window. A check that night showed that it had. At the click of a mouse the sound was returned. The chief suspect is his seven year old son.

One other experience I must share with you. This involves a mouse check-

(continued on page 45)

■ Operating

1998 Remembrance Day Contest Opening Address

The 1998 Address was delivered by His Excellency Major General Michael Jeffery, AC MC.

His Excellency was born in Wiluna, Western Australia and educated at Kent Street High School.

He attended the Royal Military College, Duntroon, graduating in 1959 as an infantry officer. He served twice in Papua New Guinea and saw operational service in Malaya, Borneo and Vietnam where he was awarded the Military Cross and the South Vietnamese Cross of Gallantry.

He has commanded all combat units of the Australian Army from a 30 man platoon to a 12,000 man infantry division and held senior two star appointments in logistics, materiel acquisition and operations.

For these services he was appointed as a Member and then an Officer of the Order of Australia.

Major General Jeffery was appointed Governor of Western Australia on 1 November 1993 and became a Companion of the Order of Australia in June 1996 for his services to the State.

His wife Marlena is from Sydney and they have four children; three of whom are serving Army officers, the fourth a civil engineer and a grandson from their married daughter.

The Opening Address

As Governor of Western Australia, a former career soldier and war veteran, I am honoured to have been asked by the Wireless Institute of Australia to launch this year's Remembrance Day Contest, which perpetuates the names of those 26 radio amateurs who lost their lives in the service of our country.

This is an historic year for this contest being its 50th year of activity.



This year also marks the 80th anniversary of the end of World War I and the 70th anniversary of the founding of the Royal Flying Doctor Service.

Indeed it was during World War II, the Flying Doctor Service, as it was then known, played an important role in the defence of Australia through its pedal wireless network.

Earlier in 1918, the founder of the RFDS, the Reverend John Flynn had warned that an attack against Australia was likely to come by air from the north. Flynn was proved right when 128 Japanese bombers droned in from the sea in early 1942 and pounded Darwin, killing 233 people and wounding 250 others. Sixty four air raids followed, some on targets other than Darwin. For example, Broome, Derby and Wyndham were attacked, which suggested that invasion might be imminent.

Flynn immediately pledged the Australian Inland Mission (AIM) to an all-out war effort: Nurses, patrol padres and wireless staff served with distinction in the battle zones. AIM buildings became troop hospitals or were used as homes

for Army nurses. Six patrol padres served as chaplains to the forces.

Lacking an adequate wireless for themselves, the defence forces used Flynn's extensive outback network based on Alf Traeger's magnificent pedal powered radio. General MacArthur himself wrote that Traeger's transceiver was "one of the most useful pieces of equipment for communication purposes over the spaces of continental Australia."

The people of the inland were the eyes and ears of the defence forces, reporting anything suspicious. They were given silhouettes of enemy aircraft to enable them to report accurately. Transceivers were also used by the army and police and a special clandestine operation using Traeger's transceivers was set up in Arnhem Land to monitor and report on any Japanese troop movements.

Australia thus owes a great debt to these amateur radio operators.

From my own experience in Papua New Guinea and on active service in Malaysia, Borneo and Vietnam, I know full well that good communications save lives and win battles. During my service lifetime I have seen radio communications develop from long messages painstakingly sent by Morse code at eight words a minute and taking hours to get through, to today's unbelievable almost instantaneous data or burst transmission transfers utilising small hand held battery powered radios with ranges of thousands of kilometres in all weather conditions with automated coding and decoding integrated into the system.

Much of today's technological progress has been made through the enthusiastic assistance of amateur radio operators.

It is fitting that we remember with gratitude, the sacrifice of those radio operators who gave their lives or were wounded as a result of their war service. We remember also the tragic loss experienced by the widows, children and families of those who gave their lives on active service.

In concluding, I would like to thank you for inviting me to talk with you on this important commemorative occasion and I strongly encourage those listening to take part in the 1998 Wireless Institute's Remembrance Day Contest.

■ Operating

A Review of VK5MIR Operations

Ian J Hunt VK5QX
8 Dexter Drive
Salisbury SA 5109

In a previous item I indicated that I would provide some kind of summary regarding the operations of Andy Thomas VK5MIR during his mission on the MIR Space Station.

Whilst there is a large amount of ground to cover, I will do my best to provide a general review of operations as seen from here in Adelaide.

VK5MIR Licence

Late in 1997 I approached the Australian Communications Authority with a request for allocation of a reciprocal licence for operations by Andy from MIR. This was done on the basis of a suggestion made by Peter VK2EMU.

The ACA agreed that this could be done and I obtained the relevant documents from Andy, who already held the USA callsign KD5CHF, and made out the necessary applications. The ACA agreed to assign VK5MIR as a "Special Event" callsign and provided the licence accordingly. Andy's licence was presented to him in Adelaide during his visit here in December and January. The licence had been granted on the basis of the equivalent to the USA Technician Class licence which Andy held.

There was then some wait whilst Andy continued with the preparations for his mission and even after his launch from Cape Canaveral and resultant transfer from the shuttle to the orbiting MIR. Some time went by whilst the crews of the spacecraft shifted stores and supplies to the space station and generally settled down into a routine which would allow Andy the opportunity to begin some amateur radio operations. In the meantime, a close watch was kept on the frequencies on which signals were expected to appear.

On Air

Once Andy got going on the radio it took him little time to grasp the techniques of amateur radio operation, bearing in mind that he had only recently obtained his USA licence.

Many contacts were made with Australian stations with signals varying in levels according to the Space Station configuration and attitudes with respect to the ground stations. Signal levels were generally strong enough that a simple two metre home station using small vertical antennas sufficed for a good contact. A number of contacts were also made using "hand-held" transceivers.

Operating Difficulties

Some problems were encountered with stations calling "blind", not having heard

signals from VK5MIR. Reasons why this occurred were generally because the operator of the relevant ground station did not have a satisfactory system and was obviously not able to hear Andy's calls. One station even abused an operator on the frequency when he was unable to appreciate that the voice he was hearing was that of Talgat RO3FT, the MIR Station Commander, speaking Russian and trying to talk with Maggie VK3CFI who not only speaks Russian but is well known to the cosmonauts.

Other difficulties occurred with QRM on the two metre frequency where stations called on voice when packet radio operations were in progress and no operator was present. Similar problems resulted due to repeated attempts to make packet radio connections when the station (ROMIR) was already connected with a ground station. Only one connection could be made at a time.

In some instances such occurrences were due to technical problems, particularly when "pager" systems produced de-sensitisation of the ground station receiver. Other instances were definitely due to poor operational techniques. Another problem occurred with stations not having their packet radio system set up to allow them to observe the connections made by other stations or ignoring them.



Andy Thomas VK5MIR looking at his VK5MIR licence.

Andy Communicates with His Family via Amateur Radio

Here in South Australia we were able to provide information to Andy of a semi-personal nature due to contact with members of his family living in the Adelaide metropolitan area. This information has been described by Andy as having been of great benefit to him whilst on his mission.

One South Australian station was able to connect Andy via phone patch allowing him to speak to family members. In another instance a mobile operator visited the home of Andy's father, Adrian Thomas, and provided the opportunity for father and son to talk to each other directly. Adrian was also able to listen to many of Andy's contacts as the space station orbit traversed Australia using a receiver and antennas loaned to him for the purpose.

As could probably be expected, some operators have criticised such operations; however, Andy has expressed great appreciation for the efforts of most Australian operators. It was also the case that he very definitely "called the tune" where contacts were concerned despite the terrific QRM problems he encountered. Naturally this situation was nowhere near as bad as Andy encountered over the USA and Europe.

Media Publicity

Despite the few minor drawbacks, generally speaking the whole operation was a success. Many contacts were made by Andy which resulted in wide media publicity for the local amateur radio operator and their hobby.

This media attention ranged from nation-wide television programs to a lengthy segment on a local FM station at the seaside town of Victor Harbor in South Australia with a YL operator involved. Once such occurrences took place there were calls from many other areas such as ABC Radio seeking information and providing "on air" coverage where Amateur Radio benefited from the attendant publicity. One ABC Radio presenter actually involved me in a 15 minute period dealing with amateur radio as a hobby with little reference to the Andy Thomas connection. A good deal of newspaper coverage has also

occurred from metropolitan daily newspapers as well as local community publications.

Participation in Australian Events

Events took place in many parts of the country with Andy speaking with various groups of people including youth clubs and Scout and Guide groups. One rather special contact along these lines was when Andy addressed a group of young offenders undergoing a rehabilitation exercise run by the South Australia Police and state Correctional Services personnel over parts of the Flinders Ranges in the north of the state. This particular effort was seen as being one of great motivational significance on the part of Andy Thomas and has been recognised by the relevant State authorities as being a major contribution to a community effort.

Other events in which Andy was involved included addressing groups of people gathered at various venues for events such as a large audience at an Adelaide Symphony Orchestra "Family Series" concert in the Adelaide Festival Theatre, the opening of the Australian Dirt Kart Championships at Kadina on the Yorke Peninsula and the opening address at the Heritage-listed Moonta Mines Methodist Church where a concert was performed by the Metropolitan Male Choir of South Australia.

In each case the connection with the hobby of amateur radio was able to be made and thus our hobby benefited from the resultant immediate publicity as well as the ongoing questions asked following such events.

There have undoubtedly been many more incidents worthy of report and aspects of which I am not aware. Stories will be told far into the future about that special contact or unusual item pertaining to Andy's operations.

Andy's Father Compiling Scrapbook of Media Coverage

Adrian Thomas has been compiling a "dossier" based on newspaper cuttings and other material available from the media, and also including audio and video material gathered in connection with these activities. He is interested in obtaining any items that are available.

Radio Theory Handbook

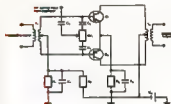
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Radio Theory Handbook

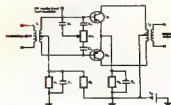
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Should you have such material you may contact me to obtain details as to how you can contribute.

Ambassador for Amateur Radio

In looking at this operation overall, there is no doubt whatsoever that it was a huge success from all points of view. Andy has been seen as a great ambassador for both Australia and the hobby of amateur radio. Now he is back at his home in Texas and recuperating well following his return from space.

It is expected that he will return to Australia later this year and it is hoped that in some way we will be able to have him either meet or make contact with as many other amateur radio operators as possible whilst he is here. Such will be done according to Andy's personal wishes, bearing in mind that there will be a big demand for his presence. It will, however, be necessary to see that his privacy is protected as much as possible whilst he is here.

New WIA Members

The WIA bids a warm welcome to the following new members who were recently entered into the WIA Membership Register:

L21073	MR R J CARSON
L21074	MR J E BURNS
L21075	MISS A ROBERTS
L70153	MR A R SIMMONDS
VK1PRG	MR R G REWHOLTZ
VK2ARY	MR R N YOUNG
VK2EJ	MR C J MINAHAN
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Australia, stand up and cheer! The all-new Emtron DX-2 HF linear amplifier is a local product to be proud of! We've checked it from AC input to coax output this month, and it's come up squeaky clean. And DX hound Jim Smith, VK9NS, has a full report on his H4ØAB activation. It's a corker story you really mustn't miss! So is that all? No way...

If there was any way we could jam more radio activity into the September R&C, we'd like to know how! Check these:

- **FILTERS:** here's the whole low-down from a filter expert. What they do, why, and how they do it.
- **REVIEW:** ICOM IC-Q7E. A dual-band hand-held transceiver with attitude! And is it really that cheap?
- **INDOOR HF ANTENNAS:** Don't laugh, this is serious. No tower need not mean no HF. These designs WORK!!
- **TREE ANTENNAS:** Ah no, we're not talking about pulling wire in a tree here. More like using the tree itself...
- **JUDICIOUS REX IS BACK!** Our legal guru stalks the corridors of power once again. A new monthly column.
- As usual, we have our **three DX columns**, mods and more... the best stories and regulars every month!

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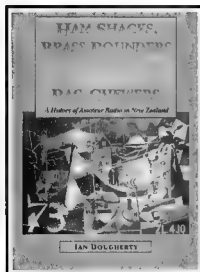
(PS. We also have the biggest collection of radio-oriented Classified adverts in the country. There's lots of them because they work so well. Ask your newsagent to keep a copy for you each month, or ring 1800 25 2515 for subscription details. Hurry — you might miss something!)

03/99

■ Book Review

Ham Shacks, Brass Pounders & Rag Chewers

Publisher: NZART (in association with Historical Branch, Department of Internal Affairs, NZ)
Author: Ian Dougherty
Reviewed by: Bill Rice VK3ABP
ISBN 0-473-04729-2



This book is subtitled "A History of Amateur Radio in New Zealand". Its author, although not an amateur himself, is a contract historian with the NZ Department of Internal Affairs and is currently writing a history of polytechnics in New Zealand.

Encyclopaedic in its coverage of the subject, the book is probably unique in the world for the wealth of detail it provides, from the beginning of amateur radio in New Zealand (in 1902), to the formation of the New Zealand Association of Radio Transmitters (in 1926), and up to the present day with about 6000 licensees. The nearest publications to compete with it in detail would probably be *Two Hundred Meters and Down* published by the ARRL in 1936, and *World at Their Fingertips* by the RSGB in 1967. Both are referred to as sources

of information (as is also our own *WIA Book, Vol 1*, which is urgently in need of expanding!).

The widespread coverage of source data is perhaps better indicated by the fact that there are 47 pages of notes, references, manuscripts and publications. Truly a historical "tour de force"!

At \$AUS25.00, for my copy from NZART direct, it will not appear in everyone's bookshelf, but is probably the best radio amateur history yet written.

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SYRIA - A Troubled Country

Due to its strategic position, Syria has been subjected to innumerable invasions, including those of the early Phoenicians, Hebrews, Romans and, of great significance, the Muslims. The country became part of the Crusaders' battleground. Instead of gaining independence at the end of World War I the country, together with Lebanon, was assigned to the French. Not until April 1946 did the country gain its independence.

6C 35 O

This QSL (6C thirty five O) celebrated 35 years of amateur radio in Syria. The WIA National Collection also contains the QSL 6C40 O dated 1987, celebrating 40 years of amateur activity. These QSLs indicate that such activity commenced in 1947. The date is most interesting. The earliest reference to amateur radio activity from Syria is possibly a small article in the January issue of *QST* 1930 when it was reported that station *arufum* from Syria was heard on the 20 metre band. One can only infer that all transmissions prior to 1947 did not have official sanction. This will not surprise many of our readers who operated pre-war. There were several countries whose operators requested that QSL cards be sent to them in envelopes which did not disclose their call-sign.

Our modern system of prefixes dates from 1 January 1929 and was the result of the International Radio Conference held in Washington. The new allocation of prefixes was promulgated in the *Radio Amateurs' Handbook* of 1929, pp 189-190. Syria was not represented. Mention has been made of the early report of Syrian station *arufum* (call-signs were frequently written in lower case). This call-sign was an "intermediate" precursor of our modern prefixes. Such intermediates were listed in the *Radio Amateurs Handbook* of 1927 (2nd Edition) pp 144-5. Syria was listed as AR and continued to be listed as such until the late 1940s. In a footnote to the 1932 edition of the *Handbook* pp 71-72 it was reported that the prefixes AR, AC (China) and AU (Siberia) are "carryovers from the old IARU intermediates system, amateurs in those countries would be better advised to use the prefixes indicated by the Berne Table of Distribution". A difficult task indeed since no official prefix was ever allocated to Syria!

Pre-war DXCC listings of countries either list Syria as AR or leave a blank space after the name. The ARRL countries list in *QST* March 1949 p 40 shows the prefix YK next to Syria, although apparently this prefix was used for some time before that date.

AR1WW

This QSL dated July 1948 is an example of a QSL showing the old "intermediate" prefix AR. It is quite possible that the first "official" amateur radio transmission from Syria used such a prefix. The National Collection contains QSLs from AR1RI, AR1OD and AR1WW, all dated 1948.

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6 C 35 O

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2 way 5.8 mt 5 3

73 a 

Omar Shabagh, P O Box 245, DAMASCUS SYRIA

DAMASCUS

SYRIA

AR1WW

W. B. Preecht
W2VLG

Y
K
I
A
A

Syria

سوريا

راي کی ۱ ای ای

DXCC

RASHEED JALAL

P.O.B. 35 DAMASCUS

راشید جلال
ص.ب ۳۵ دمشق

YK1AA

This Syrian call-sign is known to every old-timer interested in DXing. The native Syrian was Rasheed Jalal, a very active and, for a considerable time, the only Syrian amateur operator. He was an excellent QSLer, his attractive black QSL card with its red English and Arabic writing adorning many a radio shack throughout the world. The February 1964 issue of *QST* reported that Rasheed "YK1AA works for the Damascus TV outlet, records sound for cinema companies and takes care of ground communications for the Syrian army".

In the 1970s several amateur stations were operating from the Golan Heights. Some were members of the United Nations Emergency Force (eg Canadian Contingent, UN Disengagement Observer Force). They operated with Canadian call signs 4U. Later, an Austrian group of amateurs used their own call-sign NK during the 1980s. At the time there were questions asked about the authenticity of such call-signs as the Golan Heights had been annexed by Israel as spoils of the Six Day War.

(continued on page 50)

Pounding Brass

Stephen P Smith VK2SPS
PO Box 361 Mona Vale NSW 2103

This month's column is an article from George VK3TES, RAOTC #1066, on "What is the bandwidth of a Morse (CW) signal?"

I hope you enjoy the article as much as I did.

Introduction

The bandwidth of an AM signal is usually well known, being defined by the highest audio frequency components. The bandwidth of a CW signal is less well known; indeed some may be tempted to think that the bandwidth is zero. This may be encouraged by the choice of the term CW which is a slight misnomer.

A signal, to be a "Continuous Wave", must exist forever to be free of sidebands. Turning a "CW" signal on and off is modulating it and said modulation produces sidebands in the well established manner.

It would appear that the origin of the misleading term CW was when the original spark transmitters used for Morse transmission were replaced by generators of the Continuous Waves. The early generators were rotary alternators and valve oscillators, while the early spark transmitters were of pulsed-damped-oscillations.

The Morse Signal

The basic timing element of a Morse signal is the "dot". The letter E, which is one dot, has a length of two dots, one for the dot and one for the following space. The letter T has a length of four dots, three for the dash and one for the following space.

With this formula it is possible to ascribe a dot length for each letter of the alphabet. Adding all these together and dividing by twenty six gives an average character length of nine "dots". Allowing a weighting for the most used characters gives them a length of, say, eight dots.

Presuming an average word length of five characters, with three dots between characters and seven dots between words, gives

approximately sixty dots per word. At one word per minute this would be one dot per second.

This establishes Rule 1.

Rule 1

The dots per second equals the words per minute.

The Frequency Component

The dot plus space generates a square wave of time duration equal to twice the dot time, or half the frequency. This is the highest fundamental frequency generated by Morse, as the dash and the three and seven dot spaces have lower fundamental frequencies. This frequency is defined as half the dots per second.

This establishes Rule 2.

Rule 2

The highest fundamental frequency in Hz is defined as half the dots per second, or half the words per minute (frequency in Hz equals words per minute divided by two).

The basic dot cycle (square wave) has a large harmonic component, key clicks. These are removed by the usual key click filter which is normally a resistor capacitor combination which must have a time constant such that the capacitor has sensibly charged before the end of the dot period. To achieve this, the time constant of the circuit should be about one fifth of the time of the dot period.

An Example

At ten words per minute the dot period is ten per second, the dot length is 0.1 second, the fundamental is 5 Hz, and the filter time constant is 0.02 second.

The 6 dB cut-off frequency of this filter is $1/(2\pi \times \text{TC})$ or approximately 8 Hz. The first harmonic generated by a square wave is the third, or 15 Hz, and is one third the amplitude of the fundamental, or 9.5 dB down. Add the attenuation of the filter and there should be 10 Hz.

While a square wave of 5 Hz would have frequencies of 5 Hz, 15 Hz, and 25 Hz, etc, the dash and space periods produce lower fundamental frequencies as well as even and odd harmonics, hence the use of 10 Hz. This sets Rule 3.

Rule 3

The highest frequency component in Hz will be the words per minute. For example, the highest frequency component of 10 words per minute will be 10 Hz.

Comment

This explains why low speed CW signals can be received through very narrow crystal filters. The beat frequency tone is generated after the filter and only requires the presence of the carrier to beat with the BFO.

If one could have a crystal filter of zero bandwidth it would have infinite Q and once it started oscillating it would never stop, thus removing all modulation.

There may be other values quoted for the highest frequency component; these will depend on the assessment of the filtering of the keyed signal. Increasing the time constant will reduce the bandwidth.

It should be noted that the key filter will be optimised for a particular speed and equipment. This will result in somewhat modified results at other speeds.

The values quoted here have been rationalised to produce simple figure relationships.

The Rules

Rule 1. The dots per second equals the words per minute.

Rule 2. The highest fundamental frequency generated is defined as half the dots per second or half the words per minute (eg frequency in Hz equals words per minute divided by two).

Rule 3. The highest frequency component in Hz will be the words per minute (eg the highest frequency component of 10 words per minute will be 10 Hz).

Once again, thanks to George VK3TES for the above article. Next month, Morse on the move - using CW in the car. ar



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Besides being a fully-featured dual-band amateur transceiver, the VX-1R has extraordinarily wide receiver frequency coverage: you'll also be pleasantly surprised by the great audio on the FM broadcast band. A dual-watch facility is provided - and together with the AM, FM-narrow and FM-wide reception modes - you'll be having fun even when you're not operating on the amateur bands. For selective calling and listening, the VX-1R also includes a CTCSS encoder/decoder and a 104-code Digital Code Squelch (DCS) system as well as a Tone Search facility for both CTCSS and DCS encoded transmissions.

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A request! If anyone has something to send to me via e-mail, will you PLEASE make it in ASCII format and NOT as an attachment? Many thanks.

Thanks this month to VK3DMS, VK3APN, VK6NE, VK6VZ, SM3CER, ZL3KR, NZART, ARRL, and RSGB.

Special Notice

The RSGB has advised that there has been a catastrophe in their mail service. Contestants who submitted logs for the 7 MHz Contest in February are asked to resubmit those logs as soon as possible.

Results PACC 1998

VK only (Call/Class/QSO/Multi/Score)

VK2APK	SO	80	30	2400
VK4EMM	SO	77	29	2233
VK8AV	SO	79	26	2054
VK4TT	SO	22	8	176

Results Asia-Pacific Sprint February 1998

(Call/QSO/Multi/Score)

VK4EMM*	72	47	3384
VK5GN	48	34	1632

Results Sangster Shield 1998

(Call/QSOs/Score)

VK5NJ*	16	1600
VK3DID*	11	440

Results Commonwealth Contest 1998

24 Hours Section (Call/Score)

VK2BJ	6690
VK4EMM	6530
VK6VZ	4160
VK1FF	4050

Results ARRL DX CW Contest 1997

VK only (Class/Hrs/QSOs/DX/Score)

VK5AJ	SOLP	17	513	121	185,856
VK1FF	SB40	12	579	55	95,535

Contest Calendar September - November 1998

Sep	5/6	All Asia DX Contest (Phone)	(May 98)
Sep	6	Bulgarian DX Contest (CW)	(Aug 98)
Sep	6	Panama SSB Contest	(Aug 98)
Sep	12/13	Worked All Europe (Phone)	(Jul 98)
Sep	19/20	SAC DX (CW)	(Aug 98)
Sep	26/27	SAC DX (Phone)	(Aug 98)
Sep	26/27	CQ WW RTTY DX Contest	(Aug 98)
Oct	3/4	VK/ZL/Oceania DX Contest (Phone)	(Aug 98)
Oct	4	RSGB 21/28 MHz Contest (Phone)	(Sep 98)
Oct	10/11	VK/ZL/Oceania DX Contest (CW)	(Aug 98)
Oct	17	Asia-Pacific Sprint (CW)	(Jan 98)
Oct	17/18	JARTS WW RTTY Contest	(Sep 98)
Oct	17/18	Worked All Germany (Mixed)	(Sep 98)
Oct	18	RSGB 21/28 MHz Contest (CW)	(Sep 98)
Oct	24/25	CQ WW DX Contest (Phone)	(Sep 98)
Nov	1	High Speed Contest (CW)	(Oct 98)
Nov	1-7	HA QRP Contest	(Oct 98)
Nov	7/8	WAE RTTY DX Contest	(Jul 98)
Nov	7/8	OK DX CW Contest	(Oct 98)
Nov	14	ALARA Contest (CW/Phone)	(Sep 98)
Nov	14/15	IARU Region 1 160 m Contest	
Nov	14/15	All Austria CW Contest	
Nov	21/22	CW WW DX CW Contest	

Results CQ-M DX Contest 1997

Oceania (Class/Score)

VK8AV	MBCW	47742
VK2APK	SB14CW	55384

RSGB 21/28 MHz Contest

Phone: 0700 - 1900z Sun, 4 October

CW: 0700 - 1900z Sun, 18 October

Object is to work as many UK stations as possible on 21 and 28 MHz (UK includes GI, but not EI).

Categories (single or multi-operator) are: open, restricted, QRP and SWL. In the restricted section, only one antenna is allowed, which must be a single element no more than 15 m high and 100 W max o/p. The open section has no antenna or power limitations.

Send RS(T) plus serial number starting at 001. UK stations will add their county code.

Score three points per QSO. Final score equals total points times multiplier (counties worked on each band added together). Use a separate log for each band.

Send logs and summary sheets, postmarked by 13 November, to: RSGB HF Contests Committee c/o G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England. A comprehensive range of awards is offered.

SWLs may only log UK stations making contest QSOs with overseas stations. SWL logs should be headed time UTC; callsign heard; number sent by that station; callsign of station being worked; new multipliers; points. In the column headed "station being

worked", the same callsign may only appear once in every three QSOs except when the logged station counts as a new multiplier.

JARTS World Wide RTTY Contest

0000z Sat - 2359z Sun 17/18 October

This RTTY contest runs on the third full weekend in October each year.

Categories are: single operator multi-band; multi-operator and SWL. Bands are 80 - 15 m (no WARC). Exchange RST + age; YLs send RST + 00. Score two points per QSO with own continent and three points per QSO for other continents. The multiplier is the total number of DXCC countries and WVE/JA/VK call areas worked on each band, with all bands added together. Send logs, to arrive by 31 December, to: JARTS Contest Manager, Hiroshi Aihara JH1BIH, 1-29 Honcho 4, Shiki, Saitama 353, Japan

Worked All Germany DX Contest (Mixed)

1500z Sat - 1500z Sun 17/18 October

In this contest, which runs on the third full weekend of October each year, the world works Germany.

Categories are: single operator all band (CW, mixed, mixed QRP max 5 W o/p); multi-operator single Tx; SWL. Bands are 80 - 10 m (no WARC). Exchange RS(T) plus serial number. German stations will add their DOK (location code). Each station may be worked once per band per mode.

Score three points per QSO and determine final score by multiplying the total number

Results VK/ZL/Oceania Contest 1997

Continental Leaders

	Single Operator		Multi-Operator	
	Phone	CW	Phone	CW
Oceania	VK3AJJ	VK4EMM	VK4EMM	ZL2WB
Asia	UA0ZBK	YBIAQS	-----	RA0JD
Europe	OH6IU	OH8RC	-----	-----
Nth Amer	8P6CV	N6RO	-----	-----
Sth Amer	-----	HP1AC	-----	-----
Africa	9X0A	-----	-----	-----
	SWL	-----	-----	-----
	Phone	CW		
Oceania	ZL149	-----		
Asia	JA4.4665	UA0107181		
Europe	OM3277.07	ONL383		

Winner of Frank Hine Memorial Trophy for Highest CW Single Operator Score:

John VK4EMM 4306932 points

Individual Results

Phone VK

Callsign	80	40	20	15	10	Total
VK1MJ	90	30690	40425	77616	22680	722400
VK1FF		5	12604	6716		40032
VK1PK		5	10			150
VK2EKY	10	1700	122905	42504		407363
VK2XT		320	5262	6808	113646	816
320247						
VK2ARJ			58401	52392	48	237915
VK2APK		167140				167140
VK2LEE	100			240	138	49234
VK3AJJ	1650	667120	137397	174640	300	981107
VK3CAM			144			144
VK4EJ			30277			30277
VK4JAE	90			750		1428
VK4MOJ				270		270
VK5KMI		10		12		164
VK8DK		33600	990	15840	14850	65280

Multi-Operator

VK3ER	720	49200	40425	25434	16020	609124
VK4EMM	20880	189440	33823	149400	29547	1947640
VK5GN	30	1120	331	1120	297	1837332

CW VK

Single Operator

VK1FF	200	356265	61420	56144	216	1398306
VK2APK	63240	361430	65740	35600	882	1998125
VK2EKY		88635	10920	13068	1479	371316
VK3MR	2600	35625	440	4662		43317
VK3XB		8225	1184	1050		28336
VK3KS			247	198		902
VK4EMM	6210	1418715	19780	144628	26640	4306932
VK4TT			104196	25404	126	247170
VK4ICU	250	6970	3050	14784	429	96114
VK4XA					77976	77976
VK5GN	3450	15980		33372	1740	181485
VK8HA	40	5920	2332	760	1380	42939

Check Logs: VK3APN, VK5OE

CQ WW DX Contest

Phone: 0000: Sat - 2400:

Sun 24/25 October

CW: 0000: Sat - 2400:

Sun 21/22 November

Sponsored by CQ Magazine, these contests present the opportunity to work many

rare countries and zones, even with modest equipment. They are open to all stations world-wide, on bands 160 - 10 m (no WARC).

Categories are: single operator; single operator low power (max 100 W o/p); single operator QRPp (max 5 W o/p); single operator assisted (for those using DX spotting nets); multi-operator single transmitter and multi-operator multi-transmitter.

Single operator stations can enter as single or all band and can change bands at will.

Multi-operator stations must enter as all band. Multi-operator single Tx stations must stay on a band for at least 10 minutes, EXCEPT that one - and only one - other band may be used during the 10 minute period if - and only if - the station worked is a new multiplier.

Multi-Tx stations are exempt from this rule, but can only radiate one signal per band at any one time.

Exchange RS(T) plus CQ zone. Score three points for QSOs with stations in a different continent, and one point for stations in the same continent (for VKs this means Oceania as defined for WAC).

Stations in the same country or call area can be worked for additional multiplier credit, but have zero points value.

The total multiplier is the number of DXCC countries plus zones worked. Final score equals total points times total multiplier.

Use a separate log for each band. Show new multipliers in the log the first time they are worked and duplicates with zero points. Entrants are encouraged to include a "dupe sheet" for each band, which becomes mandatory for 200 QSOs or more.

Computer logs are welcome and must be in ASCII on DOS disk, using separate files for each band, eg VK7AAA.20 for a 20 m log; alternatively in K1EA "CT".BIN format, eg VK7AAA.BIN.

Label the outside of the disk with the callsign, files included, mode and category.

Disks MUST be accompanied by a paper printout satisfying logging instructions.

The committee may request a disk from high-scoring stations to enable the log to be checked by computer, if the log originally submitted was a computer printout.

Include a signed summary sheet, showing power output for the low power and QRPp entries.

Send logs, postmarked by 1 December (Phone) or 15 January (CW) to: CQ Magazine, 76 North Broadway, Hicksville, NY 11801, USA.

Indicate Phone or CW on the envelope. Numerous awards, trophies and plaques will be awarded to the leading entrants in the various categories and countries.

of German districts (first letter of DOK) worked on each band regardless of mode. Send logs, summary and dupe sheets to arrive by 19 November to: Klaus Voigt DL1DIL, PO Box 720427, D-01023 Dresden, Germany. Logs on DOS disk are welcome, if accompanied by a signed summary sheet.

ALARA Contest (CW/Phone)

0001z - 2359z Saturday, 14 November

This contest runs on the second Saturday of November and is open to all licensed operators and SWLs.

Object: YLs may work anyone; OMs and Clubs may work YLs only.

Bands: 80 - 10 m (no WARC) and suggested frequencies. 3560 - 3590; 7070 - 7100; 14250 - 14280; 21170 - 21200 and 21380 - 21410; 28380 - 28410 kHz.

Call on Phone "CQ ALARA CONTEST"; on CW YLs call "CQ TEST ALARA" and OMs call "CQ YL".

Exchange RS(T), serial number starting at 001, name and whether Club station. ALARA members will add their member number after the serial. Club stations must indicate after name.

Repeat contacts: Stations may be contacted on same band and in same mode after one hour. No net, list, cross mode or cross band operations.

Score on Phone: five points for QSO with ALARA member; four points for QSO with YL non-member; three points for OM and Club stations.

CW: contacts where at least one operator is a Novice score double points; otherwise same as Phone. SWLs score five points for ALARA members and four points for YL non-member logged.

Logs: Single log entry acceptable, but VK YLs entering for Florence McKenzie CW Trophy should use separate log. Show date, time UTC, band, mode, callsign worked, reports sent and received, name of operator worked, whether Club station and points claimed.

Send signed logs showing callsign, name and address of entrant and final score to: Mrs Marilyn Syme VK3DMS, 68 Bowings Lane, Mildura, 3500, Australia, by 31 December, 1998.

The Florence McKenzie Trophy will be awarded to the VK YL operator with highest CW score over 50 points. Certificates will be awarded to top scorers in various areas, as well as trophies to the top scoring VK YL and DX YL.

ar

ALARA

Christine Taylor VK5CTY

ALARA Publicity Officer

16 Fairmont Avenue, Black Forest SA 5055

Packet: VK5CTY@VK5CTY

Birthday Celebrations

ALARA began with a meeting on air on 21 July 1975. So, in July each year we celebrate the occasion with an Activity Day on air and by Birthday Luncheons.

Unfortunately, there was a certain amount of confusion this year. The date for the Activity Day as shown in our Newsletter was Sunday instead of Saturday (our very efficient Newsletter Editor, Dot VK2DDB, HAD one of those calendars that start the week on a Monday instead of a Sunday - the calendar has now been sent to the WPB).

Therefore, some of us were on air on Saturday and some on Sunday. However, altogether the following stations were heard. Mavis VK3KS, Bron VK3DYF, Gwen VK3DYL, Dot VK2DDB, Jenny VK5ANW and Christine VK5CTY. Let's make it more next year, shall we?

VK3 and VK5 held Birthday Luncheons. In Melbourne we had Mavis, Bron, Gwen and Jean Shaw with apologies from several others. In Adelaide we had 10 attendees, including Myma VK5YW and Jenny VK5ANW, two of the earliest members of ALARA. A new face to most of us was Judy VK5BYL, who is well known to many CW up-graders of a few years ago.

Judy made a practice of sending recipes in CW as practice for those listening to 3.550 MHz every night to improve their Morse speed.

Sometimes she used Metric measures and sometimes Imperial, and sometimes a combination of both (within the same recipe) which made it very difficult to journalise! She has been unable to come to many previous Birthday Luncheons due to business (she has now retired from that) or because of a clash with a series of family birthdays at the same time of the year. We hope Judy will be able to join us more frequently.

Our heartiest congratulations go to Janet VK5NEI on the CFASA medal she was awarded recently. Janet has been a member (now a Lieutenant) of the Woolshed/Wasleys State Emergency Service team for 20 years, mostly as their radio operator. Like so many of our unsung volunteer workers she has been called out of bed at all hours of the night to come to the aid of those in trouble.

Maria VK5BMT was another face we don't see very often at the Birthday Luncheons. This year Maria and Keith decided to stay in Adelaide for the winter instead of taking one of their tours to the warmer climes of the North. The other five, Jean VK5TSX, Tina VK5TMC, Deb VK5JT and Christine VK5CTY, with Jenny Housden just back from seven weeks overseas, have attended most of these luncheon in recent years.

To complete the day, four OMs were at a nearby table. Instead of the OMs going to a different venue and just joining us for coffee, they had their own table at the same venue. The regulars, Geoff VK5JTY, Rod VK5SX, and Rob VK5ZHW were joined by Bailey VK5BAD, OM of Judy. A pleasant day was enjoyed by all.

Traveller's News

Your reporter received a post card from Sally VK4SHE from the UK. She was on a narrow boat (or barge), just drifting along the canals of Wales. The post card shows one of the narrow boats being pulled by a horse across a beautiful stone aqueduct.

Sally says they did cross the valley on (or should it be 'in') this aqueduct but they weren't being pulled by a horse. On the way to the UK, Sally and OM Rex enjoyed a week in Thailand and several days in Rome. They are seeing something of both the old and the new world.

This is also the time for southern VKs to go north. I hope you are keeping an ear on the Travellers' Nets so you know when someone is visiting your part of the world. There is nothing like a friendly voice coming back to your call through a repeater as you enter a new city or town.

ALARA Contest

Don't forget the new rules for the ALARA Contest as given in this column last month, and in the Contest column in this month's *Amateur Radio*.

Please do participate, and please do send in your logs, but please note the new address for the logs. There are house moves afoot in Mildura so Marilyn VK3DMS has given us her business address to save confusion.

YL Meet in Svalbard

Gwen VK3DYL is going to Svalbard to represent ALARA (and WARO) in August

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Agnes PA3ADR, OM Henk and Dot VK2DDB (see text).

this year, but she will not be the only ALARA member there. At the time of writing we know there will be six DX ALARA members. Unni LA6RHA who, with Ruth LA6ZH and Turid LA9THA, is organising the Meet, is sponsored into ALARA by Gwen. They will be meeting Christa DJ1TE, Sigrid DL3LG, Ruth IT9ESZ, Angelika G0CCI and Carol WD8DQG.

Many activities have been planned for the visitors, so there will be people scattered all over the island. But one activity will keep them in one spot, at least, the radio shack! Listen out for the rare (or relatively rare) DX with a number of different operators

ALARAmeet in Brisbane

Plans are well under way for us in Brisbane next year so start making your plans to be there. A number of ZLs have already indicated that they are making plans to attend.

We can't have them out-number us, can we?

Dawn Young ZL2AGX SK

It is with great sadness we report the passing of Dawn ZL2AGX on Monday, 3 August 1998. Dawn joined ALARA in January 1987, sponsored by Val VK4VR, and was an active participant in many ALARA activities.

Dawn and her OM Dennis ZL2BFI attended the Castlemaine ALARAmeet in 1993 and showed us that her wonderful sense of humour was as good off the air as it was on the air.

She was an active committee member of WARO for many years, an avid ISSBer and DXer, and a regular on the YL 222 DX net. In late June Dawn had a sudden trip to hospital with pneumonia. Unfortunately, she was only home a short time before she landed

back in hospital after suffering a stroke. Dawn had many friends all over the world and will be missed by them all, especially the ALARA members.

ALARA Office Bearers for 1998/1999

President, Judy Atkins VK3AGC; First Vice-President, Bev Clayton VK4NBC; Second Vice-President, Robyn Gladwin VK3ENX; Secretary, Tina Clogg VK5TMC; Treasurer/Souvenir Custodian, Bev Clayton VK4NBC; Minute Secretary, Bron Brown VK3DYF; Publicity Officer, Christine Taylor VK5CTY; Contest Manager, Marilyn Syme VK3DMS; Historian, Deb Matthews VK5JT; Sponsorship Secretary, June Sim VK4SJ; Awards Custodian, Jean Shaw; Librarian, Kim Wilson VK3CYL; Editor, Dot Bishop VK2DDB; and ALARAmeet Co-ordinator, Bev Clayton VK4NBC.

State Representatives

VK1/2, Dot Bishop VK2DDB; VK3, Bron Brown VK3DYF; VK4, Margaret Scherwin VK4AOE; VK5/8, Jean Kopp VK5TSX; VK6, Bev Heblton VK6DE; and VK7, Helene Dowd VK7HD.

Agnes PA3ADR

As reported in an item a few months ago, Agnes PA3ADR and OM Henk visited Dot VK2DDB in January (see photo above) when they were in Australia to enjoy our summer during their winter. Their summer now is wet and cold, daytime 15 degrees, and they have the fire alight regularly. Agnes and Henk are planning to visit friends and family in Australia again in November and stay until after Christmas.

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How's DX?

Stephen Pail VK2PS
PO Box 93, Dural NSW 2158

Percy Anderson VK4CPA - 8K

On almost every day of the week at 0445 UTC time, an elderly gentleman known among amateurs as "Percy" sat down in front of his transmitting station in southern Queensland. His transmitter was tuned to 21205 kHz. He checked the propagation patterns, acknowledged those who tuned into the "old" ANZA frequency, and listened to the solar and geophysical reports from WWV at Ft Collins, Colorado USA or from WWVH Hawaii.

At 0500 UTC he tuned to 14164 kHz and announced: "This is VK4CPA, net controller for the ANZA net. My name is Percy. Any check-ins for the ANZA net?"

The reply was almost instantaneous. Amateurs from Australia, New Zealand, USA, Central America, the Pacific, South East Asia, South Africa, European stations on the long path, and often a rare DX station, responded. They all wanted to check-in to the net, 'the friendly net' as it was often called. They exchanged signal reports, weather reports, QSL information and passed on personal greetings. All these activities took part under the guidance of the net controller, Percy Anderson.

It is my sad duty to advise readers, that Percy VK4CPA is now a 'Silent Key'. He died after a short illness on 30 July. He was 92 years old.

Percy was from Victoria where he became a licensed amateur in 1928 using a simple CW transmitter and the callsign OA3PA, later to be changed to VK3PA. Percy was 16 years old when he was attending West Melbourne Technical School in 1922 and became interested in "wireless". He built his first crystal set and was an avid broadcast listener. In 1927 he built his first short-wave receiver and one year later he was on the bands. In 1931 he was already active on "five metres". Percy was called up for active service in World War II in July 1940. After the war he worked with the Australian Broadcasting Commission as a Senior Technical Officer until his retirement. All the equipment used

by Percy at that time was home brew (he purchased his first commercial set in 1968).

Percy joined the "Pacific DX Net" in 1970 and in 1972 he became a net controller on 14265 kHz for 10 years.

The other net, running in parallel, the ANZA net (Australia New Zealand and Africa net), was Percy's idea, and was his "baby" for the rest of his life. The first operational day was on 20 May 1970 on 21300 kHz (later to be moved to 21205 kHz). The ANZA net was 28 years old this year and is probably one of the oldest continuous amateur radio nets in the world. Percy moved from Victoria to southern Queensland near the Gold Coast in May 1987 and changed his callsign to VK4CPA.

Due to propagation problems in the early 1990s, a secondary frequency was established for the net on 14164 kHz. In the past few years a number of volunteers from VK4, VK5, VK6 and ZL came forward to assist Percy who found the daily routine sometimes tiring.

Percy's departure to the DX world of the Australian blue skies has left a big gap, not only in the running of the net, but also in the DX world generally. He was well known all over the world and his passing has saddened many of his amateur friends. However, his memory and his efforts of helping his fellow DXers will remain with us for many years. The ANZA net will continue with a variety of net controllers and it might even change its name to the Percy Anderson ANZA Net.

Nepal - 9N1

Amateur radio is making a slow but steady progress in Nepal. It was not so long ago that there was only one approved radio amateur

in Nepal, Father Moran 9N1MM ("Mickey Mouse").

Father Moran passed away some years ago, and only after his death was it revealed that his "activity approval" was a verbal one given to him personally by the King of Nepal. Since Father Moran's passing the political scene in Nepal has changed somewhat and the amateur radio service is now an accepted activity in this landlocked Himalayan country of 18 million inhabitants located between India and China.

There are now at least two licensed local amateurs, Satish 9N1AA and Suresh 9N1HA. Quite a number of "foreign" visitors have been given "tourist" visiting licences over the years.

Not so long ago, Neil VK6NE, who made a short visit to Nepal in December 1997, received a fax from Satish 9N1AA. Here are a few interesting news items.

Recently an amateur examination was held in Nepal for issuing new licences. There were twenty applicants. Eight of them passed the written test and four have passed the Morse test. This will result in four new local operators. Examinations will now be held every six months.

The information material provided by the WIA and the VK9XZ Island Hoppers Group, was extremely helpful to the Nepalese authorities in designing the examination questions.

The annual licence fee for local amateurs is now 500 Nepalese Rupees (about \$AUS6.00). However, the Nepalese Government refused to reduce the licence fees for visiting foreign amateurs (Neil VK6NE and Joe VK6BFI paid \$195.00 each for a ten days permit on 15 and 20 metres SSB).



Martin HB9CYN and Chris HB9CYV operating from Comoros Island as D68YN and D68YV

Satish thinks that the number of licensed amateurs will increase day by day. The majority of the local operators cannot afford individual modern equipment, and there are now plans to establish a club station to be named the Moran Memorial Station (9N1MM). Satish is currently trying to collect equipment for that purpose.

He says that if such equipment could be carried to Nepal by somebody (in person) it could enter the country easily. However, formal import of such equipment would be somewhat harder. The customs duty is settled this year at 30%.

VIP Radio Amateurs

During my many years of amateur radio activity, there were two special occasions when I could not get through the "pile-up".

One such occasion was when King Hussein of Jordan, JY1, was at the microphone. European and USA stations swamped me.

The other occasion was on 40 metres when Juan Carlos EA0JC, the King of Spain, was on air. An instant pile-up completely blocked my signals. On both occasions the activity did not last long, maybe twenty minutes or so.

There are other well known persons who have an amateur licence, some of them actually reported as being on the air in the past. Here is a list of these famous people. The list might not be complete and not all the call signs are listed in the Callbook.

- * A41AA - HM Sultan Qaboos Bin Said Al Said, Sultan of Oman.
- * CN8MH - HM Hassan, King of Morocco.
- * F05GJ - Marlon Brando, actor.
- * I0PCG - Francesco Cossiga, former President (1988) of the Italian Republic.
- * HS1A - HM Bhumipol Adulyadej, King of Thailand.
- * K1JT - Joseph Taylor, Nobel Prize winner (1993) in Physics.
- * K2ORS - Jean Shephard, actor.
- * LU1SM - Carlos Saul Menem, President of the Argentine Republic.
- * N2YOS - Priscilla Presley, actor.
- * VU2SON - Sonia Gandhi, widow of the former Indian Prime Minister, who also had an amateur licence
- * W6QYH - Roger Mahony, Cardinal.

A number of astronauts also had amateur call signs, the latest being Dr Andrew (Andy) Thomas KD5CHF/VK5MIR. He is claimed by both nations, having dual citizenship.

The latest addition to this list will be Japan's former Foreign Minister and now newly elected Prime Minister, Keizo Obuchi J1IKJT. Obuchi is a member of the JARL which describes him as "an enthusiast for amateur radio". Known as "Mr Ordinary Man", Obuchi, 61, will face the task of wresting Japan from the grip of its worst recession since World War II.

North Korea - PE

The number of separate DXCC entities (formerly known as DXCC countries) at present is 328. Only about 28 amateurs worldwide have reached this position on the top of the DXCC ladder. They are those amateurs who were lucky enough to have a contact with P5/OH2AM in 1995.

North Korea is still the "closed community and forbidden country" where the amateur radio service is still not given official status.

In my opinion it will take many more years before the present situation changes. North Korea is a country with a socialist political system, with "self reliance" as one of its principal objects. It is now undergoing a very difficult time. Floods, droughts, storms, failure of crops, and distribution problems have put the country into a politically sensitive situation.

The doors of North Korea will be locked until this situation changes for the better. No self respecting socialist country will put its difficulties on an international viewing platform, especially not when it is a closed society. One also must not forget the cultural aspect of "loss of face".

The 1997 edition of the *ARRL DXCC Year Book* has an interesting segment on North Korea. Here are some extracts.

"First voted into DXCC status in 1991, North Korea remained in limbo for several years, waiting only for an accredited Operation. OK1DTG/P5 was active during his stay there, but was unable to get the necessary written documentation for his operation. The P5RS7 operation did not take place from North Korea, but from Russia, leaving North Korea as a footnote in the Countries list.

"In May 1995, a short operation was made by OH2BH and OH0XX, operating as P5/OH2AM. Examination of the tapes of the operation show there was no special list and the necessary written documentation was provided.

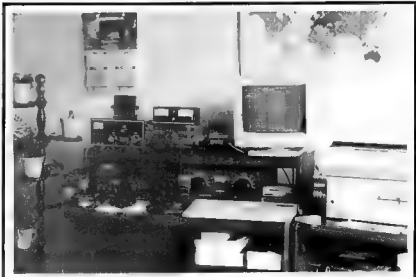
"A special DX Bulletin announced the possibility of this operation beforehand, but problems with Russian Customs at the border crossing delayed entry into North Korea, thus preventing more than a short operation. Propagation was not favourable and operating time was limited so very few contacts were made. No further operation has occurred since

"BA1HAM and JA1BK made a trip to North Korea in April 1996 for the purpose of training operators. There is an active Radiosport Association under the administration of the State Commission for Physical Culture and Sports of the DPRK. The president of this group is also the Minister of Communications. However, outside influences came into play and the result was no on-air activity.

"HA7VK applied for a licence in May of 1996, but was turned down. In late July he visited with the Communication Ministry and was told that the DPRK had plans to put a club station on air, but that it would be done with DPRK nationals."

Future DX Activity

* Tanzania - 5H. Dave K8MN will arrive at the Tanzanian Capital Dar Es Salaam at the end of August for three years duty at the US Embassy. He hopes to be on air in September (?). QSL via WA8JOC, Ken Scheper, 5875 Cedar Ridge Dr, Cincinnati, OH-45247, USA.



The station of Manuel CU7BA on Faial Island, Azores.

* **Brazil - PY.** Klaus DJ8UG will be active from September as **PT8ZCB** mostly on CW. QSL via DL9OT, Hans Kriegl, Schubertstr 38, D-76275, Ettlingen, Germany; or via the Bureau.

* **Turkey - TA.** To celebrate the 75th anniversary of the Republic of Turkey the special event station **YM75TA** will be active until 29 October. QSL via TA3YJ, Nilay Aydogmus, PO Box 876, 35214, Izmir, Turkey.

* **Cayman Island - ZF.** Rob PA3ERC and Ronald PA3EWP will be active from 8 to 20 September as **ZF2RC** and **ZF2WP** on all bands, CW and SSB. QSL via PA3ERC, Rob Snieder, Van Leeuwenstraat 137, 2273 VS, Voorburg, The Netherlands.

* **Samoa - SW.** Sakuma JI3WLT is on the bands as **5WISA** for three years. QSL via JH70HF.

* **Rotuma Isl - 3D2.** Roberto EA4DX will be active until 19 September as **3D2DX**, all bands SSB. QSL via his home call.

* **Benin - TY.** Sigi DJ4J, operating as **TY1IJ**, is good copy on 10.103 MHz CW. QSL via DK8ZD, Jochen Ermlat, Berliner Str. 31-35, D-65760, Eschborn, Germany.

* **Namibia - V5.** Ken SM7DZZ will be on the bands for one year as **V5SM7DZZ**. QSL via his home call, Kjell Grah, Sodervangsv 153, S-24636, Lodekopinge, Sweden.

* **Chagos - VQ9.** It was reported that **VQ9VK** is active from Diego Garcia Island on CW on 17 and 12 m. QSL via NITO (ex-AA10J).

* **Honduras - HR.** Mike K3UOC (ex-7Z500) will be moving to Honduras in September for at least one year on work assignment as Principal of the American School in Tegucigalpa. QSL via N2AU.

* **Togo - SV.** Marc F5PCU will be active as **5V7FA** until July 1999. He has been heard around 2100 UTC on 14173 kHz. QSL via F6FNU.

* **Algeria - 7X.** Mark ON4WW is in Algeria and hopes to operate soon with the callsign **7X0WW**. Activity will be on CW on all bands. QSL via ON5NT.

* **Western Sahara - S0.** It is reported that Mark ON4WW hopes to return to Western Sahara as **S07WW**. QSL via ON5NT.

* **Iran - EP.** Ali EP2MKO was heard on 15 metres between 1800 and 2000 UTC on CW at the low end of the band. QSL via UA6HCW.

Interesting QSOs and QSL Information

* **D2BB - Fernando - 14164 - SSB - O548 - June.** QSL via W3HNK, Joseph L Arcure Jr, PO Box 73, Edgemont, PA-19028, USA.

* **4KA6GF - Jozef - 14010 - CW - 0642 - June.** QSL via PO Box 116, Ktoprak, Istanbul, 81031, Turkey.

* **C6A25FV - Delano - 14191 - SSB - 0610 - June.** QSL via C6AFV, Delano Taylor, Box F-3563, Freeport, Grande Bahamas Island, West Indies.

* **CU3AD - Joe - 14265 - SSB - 0615 - July.** QSL via Jose Orlando Fortuna Costa, Grota Venial 1, Lameirinho, P-9700, Angra Do Heroismo, Terceira, Azores Isl, Portugal.

* **A92GE - David - 14243 - SSB - July.** QSL via David, Box 1976, Manama, Bahrain Island, Asia.

* **T77WI - Giancarlo - 14164 - SSB - 0523 - July.** QSL via Giancarlo Montico, PO Box 3,47890 St Marino, Republic of San Marino, Europe.

* **OJ0AU - 14004 - CW - 0400 - July.** QSL via DL6LAU, Carsten Esch, Kreuzweg 22, 21376-Salzhausen, Germany.

* **TG9GJG - Julio - 7010 - CW - 1202 - July.** QSL via Box 24, Guatemala City, Guatemala, Central America.

* **TY1IJ - Sigi - 10104 - July.** QSL via DK8ZD, Jochen Ermlat, Berliner Str 31-35, D-65760, Eschborn, Germany.

* **9K2ZZ - Bob - 14196 - SSB - 0316 - July.** QSL via NN6C (ex-KM6ON) Mike T Jakiela, PO Box 286, Poway, CA-92074 USA.

* **8P9HA - Edward - 14169 - SSB - 0526 - July.** QSL via WA4WTG, Robert Kaplan, 718 3rd Lane, Dania, FL-33004, USA.

* **PJ91 - 14168 - SSB - 0447 - July.** QSL direct only via Ernest Lichter, PO Box 155, Curacao, Netherlands Antilles, South America.

* **1A0KM - Francesco - 14210 - SSB - 0530 - July.** QSL via IK0FVC, Francesco Valsecchi, via Bitossi 21, 00136 Roma, RM, Italy.

From Here There and Everywhere

* **New Zealand.** Dawn ZL2AGX, a friendly lady's voice well known to the followers of the ANZA, Triple Two and YL Monday DX nets, is a Silent Key.

Dawn passed away after a short illness in hospital. Our sympathy goes to her husband Dennis ZL2BFI.

* **Amsterdam Island.** Bernard is active until December as **FT5ZL**. He has checked in to the ANZA net lately. QSL via F5PFP.

* **South Korea - HL.** South Korea was celebrating 50 years of the establishment of the Republic of Korea in August. Some of the Korean amateurs were using the HL50 prefix and indicated their call area with an additional suffix number.

* **DX Net.** The Radioaficionados Sin Fronteras (Amateurs without Borders) have a daily net at 1500 UTC on 14128 kHz, run by mostly Spanish operators. A number of African stations are regular check-ins.

* **Mauritius - 3B8.** It was reported that

Jacky **3B8CF** will be ready on 160 metres by September/October.

* **Japan JA.** Frank (also known as Zbig) VK2EKY is now active as **J76AAK/2** on all HF bands. He hopes to be active from Ogasawara (**JD1**) in the November DX Contest.

* **Belarus - EW.** The special callsign **EW50** was used during contests in 1998 by the Gomel Radio Club EW8WA. QSL via PO Box 105, Gomel 246050, Belarus.

* **QSL Information.** Andy UA3DPX also has a US callsign, **AC6WE**, which he uses for his overseas operations. He was recently active as **5B4/AC6WE** and as **1G9/AC6WE**. If you worked him do not send your card via the Bureau system to the USA; Andy will not receive it because he actually resides in Russia. QSL direct via Box 9, 141400, Himki 7, Russia.

* **QSL Information.** Yoshi JA1UT advises that he is the QSL manager for the DXpeditions carried out by IARV (International Amateur Radio Volunteers). IARV was active in Western Sahara in April 1998 as **S07CRS** and also in Palestine as **ZC6MPT**. Direct QSL via JA1UT, Yoshi Hayashi, 4-20-2 Nishi, Gotanda, Shinagawa-Ku, Tokyo 141, Japan.

* **Belarus.** To celebrate the 200th birthday anniversary of Adam Mitskevich, a celebrated poet of his time, the Belarus special event stations **EU200A**, **EV200M** and **EW200M** will be active until 31 December.

* **Canada.** Canadian special event station **CF3FHG** was active on 8 and 9 August celebrating the 125th anniversary of the Highland Games.

* **Macedonia - Z3.** Macedonian stations **Z30M**, **Z31BG**, **Z32GW**, **Z32XA**, **Z32XX**, **Z37FCA** and **Z350GBC** can be QSL'd via NN6C, Mike Jakiela, PO Box 286, Poway, CA-92074 USA.

* **Japan - 8J.** The Japan Jamboree station was active during 3 and 17 August with the callsign **8J7BSJ**. QSL via the JARL Bureau.

* **Taiwan - BV.** The 20th Annual Asian and Pacific Jamboree station **BV20APJ** was active from 2 to 9 August. QSL via the BV QSL Bureau.

* **Singapore - 9V1.** Singapore stations are allowed to use the special prefix **9V8** from 18 July until 15 November.

* **Fernando de Noronha - PY0F.** Alexandre **PY0FA** is a legitimate newly licensed amateur. QSL via PY4KL.

* **Mongolia - JT.** Special event station **JU60MTZ** was active from 11 July to 31 August 1998 celebrating the 60th anniversary of the Mongolian Railway Board. QSL via JT1CJ, Sh Gankhuyag, PO Box 100, Ulan Bator 44, Mongolia.

* **Iraq - YI.** If you had a contact with Hayder **YI1HK**, send your card via KK3S.

* **Azores - CU.** Did you know that there are about 300 amateurs on the Azores Islands group? Manuel CU7BA was kind enough to send me a photo of his neat station and a few notes about his homeland. There are nine islands in the Azores group and, accordingly, the prefixes run from CU1 to CU9. Only a few amateurs favour the HF bands, most of them staying on two metres. They also have three QSL Bureaus, CRA, URA, and ARA but he did not give me details about them.

* **DXpeditions and DX Nets.** Have you ever contemplated why organised DXpeditions do not join any amateur DX nets? The DXCC rules refer to "inappropriate ethical conduct in any aspect of DXCC participation" in their rules. Members of a net or list operation automatically have an advantage over those who do not participate in the net. Organised DXpeditions must also QSL via the Bureau system. The organisations and/or sponsors funding the activity make this aspect a condition of their financial support.

The final result is that you have to work the DX station individually under your "own steam" without the assistance of a net controller.

* **VK2 QSL Bureau Address Change.** Please note that the postal authorities in their wisdom have changed the box numbering system at Teralba. The correct address of the VK2 QSL Bureau is now VK2 QSL Bureau, Box 3073, Teralba NSW 2284, Australia.


QSLs Received

3B7RF (1 m - HB9RFO); RK2FWA (4 m - DK4VW); 9M0C (2 m - G3SWH); FOOFI (3 w - K6SLO); V8EA (4 m - JH7FQK); ET3KV (4 m Heinz Volkoff, PO Box 7633, Addis Ababa, Ethiopia, Africa).

Thank You

Many thanks to the supporters of this column who regularly supply me with the news and information which makes this column possible. Special thanks to VK2CSZ, VK2EFY, VK2KFU, VK2TJF, VK2XH, VK4LV, L40370, VK5WO, VK6LC, VK6NE, CU7BA, JA1UT, J76AAK/2, ARRL Letter No 29, The DXCC 1997 Year Book, Ohio/Penn DX Bulletin, QRZ DX, The 425 DX News, The DX News Letter, and The DX News Magazine.

ar



AWARDS

John Kelleher VK3DP
 President Awards Office
 4 Brook Crescent, Box Hill South, VIC 3108
 Tel: 03 9589 8383

Recently, I came across an article in an English publication concerning Japanese Amateur Awards, which varied slightly from the usual JCC, JCG, WAJA, etc. Temptation got the better of me, so I decided to copy most of that article for our own magazine.

The information originally came from Kouji Hoshi JQ1HBT, who is a member of the JA Awards committee. I have been in touch with Kouji, and he has given his permission to reprint in part or whole.

Do you know how many amateur radio stations there are in the world? The answer is approximately 2.5 million. Of these, about 1.32 million are in Japan. You may realise how large this number is if you compare it to approximately 16,500 in Australia, or 63,000 in the United Kingdom.

There are many Award programmes run by JARL, various Clubs and individuals. Here, I would like to emphasise the ADXA and WASA Awards, issued by JARL, and to invite applications for these awards.

ADXA - Asian DX Award

ADXA is the first JARL HQ award for contact with overseas stations issued since 1970. It is issued to stations who obtain QSL cards from 30 or more countries in Asia.

The countries are defined by the DXCC Country List issued by the ARRL. There are about 50 countries in Asia according to this list.

ADXA was a difficult award to achieve for a long time, due to low activity in most of Asia except for a few countries such as Japan and Asiatic Russia.

Therefore, in 1987, the JARL established the "ADXA-HALF" award, which requires contact with just 15 Asian countries. Here are the rules:

ADXA and SWL-ADXA

May be claimed for having contacted/heard and received a QSL card from an amateur station located in each of at least 30 Asian countries, including Japan. It follows,

therefore, that to claim the ADXA-HALF, contacts must have been confirmed with 15 Asian countries. Here is the Asian Countries List for ADXA:

1S/9M0 Spratly Islands, 3W/XV Vietnam, 4J/K Azerbaijan, 4L Georgia, 4S Sri Lanka, 4X/Z Israel, 5B Cyprus, 7O Yemen, 8Q The Maldives, 9K Kuwait, 9M2 West Malaysia, 9N Nepal, 9V Singapore, A4 Oman, A5 Bhutan, A6 United Arab Emirates, A7 Qatar, A9 Bahrain, AP Pakistan, BV Taiwan, BY/T China, EK Armenia, EP Iran, EX Kyrgyzstan, EY Tajikistan, EZ Turkmenistan, HL South Korea, HS Thailand, HZ Saudi Arabia, JA/JS 7J/K Japan, JD1 Ogasawara Islands, JT/V Mongolia, JY Jordan, OD Lebanon, S2 Bangladesh, TA Turkey, UA8-9-0 RA-RZ Asiatic Russia, UJ/UM Uzbekistan, UN/UQ Kazakhstan, VR/29 Hong Kong, VU India, VU Andaman and Nicobar Islands, VU Laccadive Islands, XU Cambodia, XW Laos, XX/9 Macao, XY/Z Myanmar, YA Afghanistan, YI Iraq, YK Syria, and ZC4 UK Sovereign Bases on Cyprus. Notable exceptions to this list are Pratas Island and Scarborough Reef, which may not have been gazetted at the time that this information came to hand.

WASA - Worked All Squares Award

The WASA is for confirmed contacts with different Locator Squares, regardless of political borders or countries. Whilst only Asian countries count for the ADXA award, all stations in the world count for the WASA award. These include Maritime Mobile stations in the oceans of the world, giving the operator more chances to work additional squares.

WASA has two versions defined by frequency bands. These are WASA-HF, and WASA-V-U-SHF for the higher bands.

The basic WASA-HF award requires 100 points (different squares) in the bands up to 28 MHz, all worked from the same Grid Locator Square, (first four digits)

Achieving 100 points is relatively easy if you work multi-band. Of course, you can attempt single band operation too. It is better to contact as many/MM stations or rare island operations as possible, because of their unique squares

The WASA-V-U-SHF is for 50 MHz and above, but it is not so easy compared to the HF award. The WASA award is a young award, introduced in 1992.

All information about JARL awards may be obtained from JARL Award Desk (Operations Section) 1-14-2 Sugamo Toshima, Tokyo 170-73 Japan; or <http://www.jarl.or.jp>. Fees for all JARL Awards are now 12 IRCs or equivalent.

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Holidaying in Queensland

I am writing this while holidaying in Queensland. I have not been able to do much listening, naturally, as I have my mind on other things. I did bring my little Digitor portable but the apartment I was staying at has a lot of steel girders which significantly attenuate the signals. Yet, here in Brisbane, it has been much better. I have been surprised at the differences between reception in Tasmania and here in the sub-tropics.

The higher frequencies seem to propagate better in the daytime than down in the

temperate climes, particularly above 17 MHz. I would not be surprised that 15 metres would be crawling with signals, while in Tasmania only an occasional signal would be heard. Also, the tropical bands are alive and active in the daytime, which is not the case down there. I am hearing Pacific Island stations as early as 0530 UTC, while in Tasmania propagation does not come in until well after sunset around 0830 UTC. I do wish I had more time for further listening.

American Armed Forces Radio

Recently, an unlisted feeder unexpectedly appeared in the middle of the 12 MHz maritime allocation. The program was the American Armed Forces Radio and Television Service from Los Angeles, CA. They have not been heard on short-wave for many decades and are apparently now on dedicated military satellites.

AFRTS were quite puzzled why they were being heard again on HF, for it was without their authorisation. Eventually the source was tracked down to Puerto Rico and could have been related to a military exercise being held off the northern coast of South America. Maybe the SatComm feed dropped out. The frequencies were 12695.5 and 4278.5 kHz, both on USB. Many reported hearing the AFRTS and it brought back memories of when they were easily heard in the sixties.

Short-wave Budget Cutbacks

Budget cutbacks are continuing and the latest station to feel the pinch is Radio Vanuatu just off the Queensland coast. Apparently their FM outlet has been closed and other existing programs have been reduced, but they are still being heard until sign-off around 1100z.

Radio New Zealand also has reduced their output and relays their domestic National program, although news bulletins in some Pacific languages are heard in the morning. From 6 September, Radio New Zealand changes over to 9700 kHz for their evening broadcast and operation on existing frequencies remains unchanged. Sign-off is 1015 UTC. The Web site now is <http://www.rnzki.com>.

Effectiveness of Short-wave

The recent events in Niugini, where a massive tidal wave devastated the northern coast west of Madang, killing thousands and leaving many homeless, again demonstrated the effectiveness of short-wave radio. Radio Australia's unique service in Pidgin carried it extensively while the district station in Vanimo on short-wave was down. It has since been reactivated; I don't have the frequency handy but it is in the 90 metre tropical allocation, possibly around 3.2 MHz.

Here and There

I was able to attend the August monthly meeting of the Sunshine Coast Amateur Radio Club at Bli Bli. It was good to resume friendships as well as forge new ones. I was also pleased to meet Hans Kiesinger, a well-known listener with many years experience.

I do hope that I will be able to meet others in the remaining time I have.

Tabiti is rather spasmodic, I am informed. It is on 15170 kHz in both French and Tahitian and has been heard in our local daytime. Apparently WYFR has also been heard under it at times.

The recent terrorist outrage in East Africa was covered by most media outlets throughout the world for a few days. You could catch up with the latest by tuning into the Voice of Kenya in Nairobi on 4915 kHz. However, here in Australia the best time is around our local sunrise, which corresponds to their sign-off time. Other Kenyan channels reportedly are 4935 and 4885 kHz. Tanzania, which also suffered a bomb, is on 5050 kHz yet is rarely heard here.

South Africa

On the occasion of the World Amateur Radio Day on 19 September, the International Amateur Radio Union, Region 1, will broadcast a special program to celebrate the 75 anniversary of the first transatlantic radio amateur contact.

Transmissions will be via SENTECH Meyerton as follows: 1300-1355 UTC, 7205 kHz (100 kW, Southern Africa) and 21545 kHz (250 kW, Europe and Middle East); 1900-1955 UTC, 3215 kHz (100 kW, Southern Africa) and 15205 kHz (250 kW, Europe and Africa); and 2100-2155 UTC, 15205 kHz (500 kW, North America). SENTECH will provide its transmitters for free, as they used to do for the weekly "Amateur Radio Mirror International" of the South African Radio League. For more information contact Hans van den Groenendaal at hans@intekom.co.za.

Conclusion

Don't forget that a supplementary broadcast period comes into effect as from 6 September at 0100z. However, major alterations will occur on the last Sunday in October when daylight saving ceases in Europe and North America.

Well, that is the news for this month. Until next time the best of 73 and good listening!

AT

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Two New Amateur Radio Satellites

I thought I'd have some news this month regarding the full deployment of TMSAT-1 and TechSat-1B, but the commissioning of these new birds is taking a little longer than anticipated. The latest report from the AMSAT News Service follows:

Amateur radio's two newest satellites, TMSAT-1 and TechSat-1B, are doing very well after reaching one full month in space following a successful (joint) launch from the Russian Baikonur Cosmodrome last July. Both satellites are still undergoing initial loading of flight software. Chris Jackson, G7UPN/ZL2TPO, tells *ANS* that TMSAT commissioning is proceeding rather slowly due to a number of reasons.

Jackson says ground control stations have been operating the downlink transmitter only over certain parts of the globe, mainly Bangkok and Surrey. The satellite is also performing a number of new tasks that have not previously been used before, and this is taking some time to get fully operational in orbit.

On Friday, 7 August the TMSAT gravity gradient boom was deployed following a command from HS0AM, the Bangkok control station. Telemetry data from the deployment showed that the 6.2-metre boom deployed perfectly with less than 1.5 degrees of oscillation from vertical. Currently, the attitude will continue to be improved and testing of the spacecraft payloads will commence.

Shlomo Menuhin 4X1AS reports TechSat-1B is also responding well to ground control commands. 4X1AS tells *ANS* the satellite recently took its first picture from space, centred over the French Riviera near San Tropez. The image is available for viewing on the world-wide web using the URL: <http://ftp.amsat.org/amsat/images/TechSat/Cam2.jpg> (I've seen this picture and it's worth a look).

Both satellites are expected to be available for general amateur use shortly. Responding to a question from Keith Baker KB1SF, Executive Vice President of AMSAT-NA, both the TMSAT and TechSat teams have answered they wished OSCAR numbers to help designate their new spacecraft. KB1SF also passed along congratulations from all AMSAT-NA members to both teams on their outstanding success.

The assignment of consecutive OSCAR numbers to new Amateur Radio spacecraft is a tradition that dates from the launch of the very first Amateur Radio Satellite, OSCAR 1. In order for an OSCAR number to be assigned, the satellite must successfully achieve orbit and one or more transmitters must be successfully activated in the Amateur Radio bands. Then, the builders/owners of the satellite must formally request that a consecutive OSCAR number be assigned to their satellite once the first two requirements are accomplished.

Speaking for the TMSAT team, Chris Jackson G7UPN/ZL2TPO said that "I have spoken with our Thai colleagues and they are happy for TMSAT to be named TMSAT-OSCAR-31." Likewise, Shlomo Menuhin 4X1AS, speaking on behalf of the TechSat team, said "We at the TechSat project agree to all the terms and would be glad if the TechSat-1A will have the OSCAR number GO-32. The letter G stands for GURWIN."

KB1SF has informed *ANS* that, in the light of this information, it is now appropriate to refer to the two new amateur satellites as 'TMSAT-OSCAR-31' (or simply TO-31) and 'GURWIN-OSCAR-32' (or simply 'GO-32') respectively [end of quote from *ANS*].

It will be seen from the above that things are progressing nicely and it is very likely that by the time I write the next column both satellites will be in normal service. This will give the digital satellite users five such birds to contend with and it will be interesting to see how things turn out as far as usage is concerned.

At present, UO-22 carries all the international packet radio message forwarding as well as its share of general amateur message traffic. KO-23 carries most of the load of store and forward messages and bulletins, with KO-25 coming in a close second. The popularity of KO-23 stems mainly from its 1300 km orbit which, compared to the 800 km orbit of KO-25, gives it a much wider footprint and longer access times.

Passes of 20 to 25 minutes are the norm for KO-23 and this increases the downloading capability of ground stations considerably. With five such birds in orbit it will depend mainly on orbit characteristics which ones will carry most traffic in the future. With orbit apogees of about 820 km, TO-31 and GO-32

AMSAT National Co-ordinator

Graham Ratcliff VK5AGR

E-mail: vk5agr@amsat.org

AMSAT Australia Net

The AMSAT Australia net is held on 80 and 40 metres LSB each Sunday evening. During daylight saving time in South Australia the net is on 7068 kHz +/- QRM with an official start time of 1000 UTC (with early check-ins at 0945 UTC). During the rest of the year, the net is on 3685 kHz +/- QRM with an official start time of 0900 UTC (with early check-ins at 0845 UTC).

AMSAT Australia Newsletter and Software Service

The newsletter is published monthly by Graham VK5AGR. Subscription is \$30 for Australia, \$35 for New Zealand, and \$40 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

AMSAT Australia

GPO Box 2141

Adelaide SA 5001

Keplerian Elements

Current keps are available from the Internet by accessing the AMSAT FTP site, [ftp.amsat.org](ftp://ftp.amsat.org) and following the sub-directories to "KEPS".

will be in the same class as KO-25, so many people may still use KO-23 as their preferred satellite.

The higher inclination of the two new birds may favour stations at higher latitudes but the large footprint of KO-23 covers the poles even though its inclination is only 66 degrees. Only time will tell.

A New Space Telescope

It was announced recently that a new orbiting space telescope was being planned. The project, called the Microvariability and Oscillations of Stars project, or MOST, will bring together teams from Canada and the United States to design a low-cost, 50-kilogram satellite.

This will be a really small device compared to the HUBBLE Space Telescope. The satellite's telescope, no bigger than a pie plate in diameter, will be secured to a suitcase-sized platform. A new, lightweight gyroscope makes the project possible.

Although tiny, the satellite and its telescope will be a powerful tool to help astronomers probe the internal structures of stars to determine their ages. I guess our challenge will be to detect such a tiny satellite. Its size puts it in the same class as some of our amateur satellites as far as visibility is

concerned. Perhaps, under the right conditions of reflected sunlight, it will be visible to the naked eye.

"Voice" Satellites?

I recently attended the Convention at Albury, NSW. The AMSAT badge usually attracts a few questions and this time was no different.

The main thing people wanted to know was, "How many voice satellites are operating at the moment?" That one usually prompts an evasive reply. One, because I don't work the analogue satellites much; and two, because the situation is quite dynamic. Changes happen almost day to day.

It does show, however, that there is a great deal of interest in the general amateur community for this type of operation. Newcomers will think of the voice or analogue modes first. Sadly, the present situation is not good for newcomers. OSCAR-10 is working, but unreliable. As I write this column it is virtually unworkable even with high gain antennas. Past experience shows it should come good in a few weeks and be relatively easy to work.

The Russian RS series of satellites, which for so long afforded the newcomer an easy and satisfying way into the game, have failed one by one and only RS-12 remains reliably in analogue mode. RS-15 is intermittent in operation and unsuitable for a newcomer.

The Fujis are probably the best bet at present but they require 70 cm SSB capability and this puts a lot of people off. So, RS-12 remains as the only reliable "easy-sat" for beginners. Even RS-12 mode "A" requires SSB capability on 2 m and 29 MHz and this, too, puts a lot of people off.

I don't know what the answer is. The march of technology means that the designers of new amateur radio satellites have to do some crystal ball gazing to try to anticipate the state of technology in, say, five to 10 years time from when the design phase of a new bird begins. This usually means that modes like mode "A" and FM and bands like 29 MHz and even 2 m are very low on the priority list. Sadly, it is becoming more difficult to advise newcomers of an easy learning track into amateur radio satellites. I believe that planners of the amateur radio component of the International Space Station will address this problem.

Speaking of the Fujis, it was reported recently that the Fuji-OSCAR-29 satellite will remain in Mode JA as controllers investigate the spacecraft's on-board computer bit errors. The command team is asking amateurs to monitor the FO-29's CW telemetry and report when the telemetry value for channel 5 changes from 00. Channel 5 is the fifth telemetry item sent after "HI HI" in the telemetry sequence.

Intruder Watch

Gordon Loveday VK4KAL

Builder of the New South Wales
Freeport No 4, Rubyvale QLD 4702
Tel: 07 4666 4188
Postnet: VK4KAL@VKAUN-1

The P7A station on 21.159 kHz (see summary below) has been operating for years, and we get no further than these details. Can any observer group come up with any further information as to its location?

For Region 3 Observers

In VK we have suffered from "Numbers Stations" and have wasted a lot of time trying to make sense of them; no doubt other observers have also.

WIA/IARU Monitoring Summary for July 1998

Freq	Date	UTC	EMM	Details
3.559	2106	1230	A3E	Radio Korea Pyongyang, poss ID
7.0395	1806	1040	A1A	SLB "F&S" Navigational CIS
7.0980	0107	0051	A3A	UiBC, Jakarta, mentioned often
10.1315	2407	0500	N0N	UiCAR, sum F1B nil sh & bd rate
10.150	2606	1223	A3E	UiBC Chinese language
14.1265	3007	daily	F1B	UiMUX, 220 hz/144 bds. 3 ch rev/pt
14.250	2306	2000	A3E	Voice of Russia, H2/7.125
18.075	0707	0625	A3E	UiBC SE Asia non amateur
21.159	2006	0525	A1A	P7A Calls P8M shifts to 21.163

WIA QSL Bureaux

The official list of VK QSL Bureaux. All are Inwards and Outwards unless otherwise stated.

VK1	GPO Box 600, Canberra ACT 2601
VK2	PO Box 3073, Teralba NSW 2284
VK3	40G Victory Blvd, Ashburton VIC 3147
VK4	GPO Box 638, Brisbane QLD 4001
VK5	PO Box 10092, Gouger St, Adelaide SA 5000
VK6	GPO Box F319, Perth WA 6001
VK7	GPO Box 371D, Hobart TAS 7001
VK8	C/o H G Andersson VK8HA Box 619, Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court, Kingsley WA 6026

Reports should be directed via internet to lab@jari.or.jp. FO-29 will be in constant sunlight through mid-August. The operating

schedule may be changed in late August to cope with the rising temperatures sunlight is expected to cause on the spacecraft. ar

Help

An unconfirmed listening report states that North Korea is using 14.055 MHz for a feeder service from Pyongyang to one of their transmitter sites. The times heard are from 0400 to 0800 UTC; the program is possibly in Japanese!

Voice of America

VoA had a slip up on 13 July when they started transmitting on 14.205 MHz, causing havoc to an existing amateur SSB net from 2200 to 2228 UTC, when it re-appeared on its licensed frequency of 15.205 MHz!

VHF/UHF

An Expanding World

Eric Jamieson VK6LP

PO Box 168, Menangle SA 5284

Fax: 08 8574 1777

Packet: VK6LP@VIA.ADL.SA.AUS.OZ

E-mail: vk6lp@ozemail.com.au

All times are UTC

VHF Doldrums?

Whether it's the cold weather of winter, the change in weather patterns, or for whatever reason, little activity has been reported from VK on any bands.

I know there is considerable construction activity taking place, especially for the microwave bands up to 24 GHz, in readiness for the forthcoming summer when, hopefully, conditions will allow the new equipment to be successfully used.

First VK5 to VK6 QSO on 144 MHz

In the light of this situation, I have delved into my history files and extracted details of the first two metre contact between VK5 and VK6, that of Clem Tillbrook VK5GL and Rolo Everingham VK6BO. This occurred on 30/12/1951 at 0712 UTC with signals 5x5, VK5GL used 15 watts and VK6BO 45 watts, both in the AM mode, propagation mode Es.

Clem wrote: *My equipment was as follows - Transmitter: 6J6 crystal oscillator about 8 MHz (Mc's in those days) doubling in the second part, plus another tube as treble into a 6V6 about 48 MHz. This was driving an RK34 push-pull treble to an 832 final at about 15 watts. (Clem says he still has the final unit!)*

The modulator was a pair of 6V6's in push-pull using plate modulation via a Ferranti 1 to 1 output transformer as a modulation transformer

The antenna was a four over four at 35 feet, fed with open wire line

Clem said the receiver was featured in *Amateur Radio* magazine in early 1951 and he still has the converter.

It was called a 6 and 2 metre converter which used a 6SH7 as a crystal oscillator and 6J6 treble when switched to the two metre position.

This particular unit had two front ends, one each for six and two metres, with a 6C4 cathode follower to tune into a receiver

covering 3 to 7 MHz. By using a 9.400 MHz crystal, the fifth harmonic at 47 MHz was 3 MHz away giving 50 to 54 MHz coverage. By switching in a further treble this gave 141 MHz and 144 to 148 MHz coverage by tuning from 3 to 7 MHz.

The two front ends were the same and consisted of a 6J6 push-pull neutralised RF amplifier to a 6J6 push-push mixer - all home brew.

The letter from Rolo said: *Clem. You beaut! Transmitter: VT52 (EL32) oscillator at 8 MHz, VT52 tripler to 24 MHz, 6AQ5 doubler to 48 MHz, 832 tripler to 144 MHz, 815 PA at 144 MHz.*

Receiver: Converter - a 6BO "Dogwood Sandwich" consisting of a 6J6 neutralised triode push-pull RF amplifier to an RL37 cascade, CV6 mixer, CV6 oscillator on 132.5 MHz, 6SH7 IF amplifier at 11.5 MHz, into a "little portable receiver!"

The little portable rig consisted of a 6J8GA mixer, 6G8G IF and AVC, 6H6 noise limiter, 6SN7GT cascade AF amplifier (yes, half the 6SN7GT to a five inch speaker), 6J5 BFO.

The antenna was a five over five with full-wave spacing of the bays. Wide spaced elements, folded dipole all made from 5/8 inch conduit! The top bay was 53 feet above ground and the height above sea level a further 35 feet. Tnx a lot. 73s, Rolo.

Rolo gave his latitude and longitude bearings and on my computer program his grid locator at Bassendean is OF78xc.

At the time this contact was quite an achievement on two metres over a path distance of 2120 km. Since then, the number of stations to work Perth from Adelaide has risen but not to high numbers. It has never been an easy path to Perth and most contacts have been via Es. Recently, however, a good opening saw the path bridged via tropospheric propagation. Nevertheless, such a contact remains elusive to many.

A Plaintive Call ...

Mike ZL3TIC issued the following plaintive cry on the Reflector recently: Wednesday 29 July 1998: *Gays - the time is 0130 and the band is wide open to ZL1 and ZL2 I'm also hearing 45 240, 250, 260, 46.170, 240, 55.240, 260, 57 240 all 5x9+ I'm calling and calling... no one home! Where is everybody?*

Ele Metres

I recently received a post card from his family which conveyed the simple message that Cliff Betson ZL1MQ, had passed away on 30 March 1998. Cliff was one of the pioneers of six metre operation in New Zealand, dating from the 1940s. He wrote the monthly *VHF-UHF Scene* column for *Break-In*, the journal of the NZART. Cliff and I exchanged pre-publication versions of our columns for

several years. I worked him from time to time on six metres, the first time in 1963. Cliff will be missed not only by readers of these columns but by his many radio friends.

Emil Pocock W3EP in *World Above 50 MHz* reported: *The first transatlantic sporadic-E propagation appeared on 50 MHz for this year on 4 June, when KP4EIT and WP4O worked CT1DNF around 1130. KP4EIT added OZ and G calls to his log later that morning. VE1PZ made it to CT1CAD at 1242 for the first transatlantic contact from mainland North America*

Europeans appeared in American logs on at least nine other days in June, as summarised in the table below. The table shows the extreme times for each identifiable opening, with participating call areas and country prefixes. Not all US and Canadian call areas shown necessarily worked all the European countries shown and vice-versa. In some cases, a call or a country appears because of a single contact.

Date	Time	Call areas and countries
4	1130-	KP4, VE1-CT, OZ, GW
6	1150-1215	W1,2,3-EH
10	1800-1810	W1IW-GB3M3CB/b
14	?	W5KFT-CT3FT
19	1030	VO1ZA/b-GJ4ICD
19	1930-2315	VE1,9, W1,3-G, PA, OZ, SM, OH, DL, SP, OE, SS
22	1205-1320	W1,3-CT, EH, I
23	1130-1530	W1,2,3,8, VE3-CT, EH, I
	1515-1610	W8,9, D8-DL, 9A, OK, SP
	1830-2000	W1,9, W1,8-CT, EH
24	1400-1515	W3,4,5-EH, G, ON
	1445-	KP4-G
27	2100-2250	VE1,9, W1,4-CT, EH, G, GW, GM, GD, PA, ON, DL
28	1545-2330	VE1, W1,8-EH, CT
29	1610-1700	W1-CT, EH
	2100-2245	W1-CT, EH

Most of the openings in June were marginal affairs. Signals were often very weak and in and out of the noise. As consequence, the majority of the transatlantic activity took place on CW. On several days, only a few of the best equipped and located US stations were responsible for the bulk of the contacts. As has been the case in past years, stations in the Maritime provinces and New England seemed to get the lion's share of Europeans

June 23 was an exceptional day, because the usual Maritime and New England stations were not the stars of the show. They were laboriously pulling CT, EH, and other stray Europeans out of the noise, but the most spectacular contacts were made from the Midwest. George Dowell, K0FF (EM49) in Missouri, worked 9A8A (Croatia), OK1DDO (Czechoslovakia), SP6GZZ (Poland), and seven German stations in a single 55-minute CW run. The Europeans were 559 to 599 into

Missouri, but East Coast stations could not even hear what George was working. Many were straining hard, as these were rare catches even for the most active DX hounds.

Europe was not the only source of countries available to US and Canadian DXers. Widely worked in June were FP5BU, KP4EIT, WP4O, and others from Puerto Rico.

Other parts of the world shared in 6-metre sporadic E DXing. On June 28, Hatsuio Yoshida, JA1VOK (QM05), hooked up with JT1KAA (ON37) in Mongolia at about 3100 km and had QSOs with UA0CQ and UA0ZBK (PN78) in Russian Siberia.

Finally, the list of new and rare countries Europeans worked in June is just astonishing. Among the more interesting catches reported by Six News, the OH2BUA WebCluster, SM7AED, SM7FJE, G3UPS, and G3FPK, were these European countries: Jan Mayen (JX7DFA), Faeroe Island (OY3JE), Macedonia (Z32ZM), and Liechtenstein (HB D5LL). From Eastern Europe, there were many stations from Russia (UA-UI and RA), and the Ukraine (UR-UZ), Belarus (EW8DD and others), and Moldova (ER3R). Countries reported from the Caucasus and further east included Georgia (4L5O), Armenia (EK6-AD), and Kazakhstan (UN3G), the latter on the Chinese border! From the Middle East, Europeans vied for several stations from Israel (4X and 4Z), Jordan (JY9QJ), Lebanon (OD3RAK), Turkey (TA7V), and Oman (A45ZN).

Japan to W5

A number of sources have mentioned contacts between W5 and Japan. On 20/7/98 at 0049 N5JHV worked JA1RUJ, followed by J1UHX, JR2HCB and JA2EMQ until 0111. 0212 N5JHV worked JA4KFA and JA4DLP.

After a break of 17 years, JA and W5 have worked. At 0035 N5JHV began hearing two distinct carriers on 49.750. He called CQ DX on 50.110 until at 0049 he worked JA1RUJ, followed by the others mentioned above. Distance to JA4KFA is about 10,260 km.

Equatorial Guinea

Alan 3C5I continues to appear in the overseas news. He reports: On 27/7 a great opening from 3C to Europe, very strong signals! Heard OZ5QF belting through 5x9+ at 1712 but could not break in. Worked SM7WDS, IW2AET, DL4IBD, DL6AMI, DF5LQ, SM7FJE, SM7AED, IK4FMT, ON7TN, PE1PZS, IZ4BEZ, OZ8RW, DJ4SO, IK3HHJ, OZ1LO, IK4GME, DL9USA, DL0KCT, DL3HRM, DL3DXX, E7GL. The band dropped out at 1735.

Sporadic E on 144 MHz

Two metre sporadic E in Europe has also been

spectacular, according to Norman Fitch G3FPK, and David Butler G4ASR, who write VHF columns for *Radio Communications* and *Practical Wireless* magazines in England. There were openings on 3, 5, 6, 11, 12, and 18 June across much of Europe.

The most spectacular session was on 3 June, when stations in the south of England hooked up with SV1OH and SV7ADJ (Greece), SV9DC9KZ (Crete), and 4Z5BS, 4X4MO and other Israelis on 2 metres. Others in the north of England made it to Bulgaria and Romania. The longest contacts were in the 3500 km range. On 11 June, many northern Europeans worked North African stations CN8HB (Morocco), EA9MH (Cuba) and 7X2DS (Algeria), in addition to numerous Spanish and Portuguese.

Today's News reported that on 6/7 at 1315 G4CQM copied the Canadian beacon VE1SMU/H on 144.300 MHz. Distance about 4376 km. Perhaps the time is nearing when a transatlantic two metre contact will eventuate.

Southeast Asia is the world's hot spot for sporadic E, but the 18 days of 144 MHz E-skip in Japan during May and June were unusual. JR4ENY reported over the European VHF reflector that there were a dozen distinct openings on 1, 8, 15, 17, 19, 22, 23, and 24 May averaging about an hour each. During the first three weeks of June, JR4ENY reported another dozen openings on 1, 6, 7, 12, 13, 15, 16, 20, and 21 June.

At least five of the openings included contacts with adjacent Korea or Taiwan, which is within single-hop distance from much of Japan. Hatsuio Yoshida JA1VOK also reported an unusual two metre SSB contact with JA0SUQ/JD1 on 24 May. Minami Torishima is an island 2000 km south-east of Japan in the Pacific Ocean and counts as a separate DXCC country. This may be a first on two metres between the two countries.

First QSO on 411 GHz

The German magazine DUBUS (II 1998) reports that DB6NT and DL1JIN completed a contact on 411 GHz on 6 January over a path of 50 metres. Yes, it is still radio, but at a wavelength of less than 1 mm, about the thickness of a piece of cardboard. Atmospheric absorption is severe at this frequency, so it will be interesting to discover just how far the distance can be pushed. The technical difficulties in building equipment for frequencies of 300 GHz and above are daunting.

The DB6NT transceiver begins with a stabilised 119 MHz crystal oscillator and a multiplier chain to produce a 20 mW signal at 45.6 GHz. This is fed into a wave-guide with a Russian beam-lead Schottky diode

fitted into its end, which serves as a 9x multiplier on transmit and a harmonic mixer during receive. The 150 mm (about 6 inches) dish antenna is fed by the wave-guide to a Cassegrain sub-reflector.

The DL1JIN design is slightly different. It uses a 54.1 GHz Gunn oscillator stabilised by a 80 MHz crystal oscillator and phase lock loop mixer. The 54.1 GHz signal then drives a Schottky diode on the end of a four wavelength probe. The radiation from the probe is reflected through a Fresnel lens with a 40 cm focus.

24 GHz in Queensland

It seems 24 GHz is beginning to move in Queensland. I note that Gerald VK4ZSG has been in touch with David VK5KK regarding availability of PCBs for that band.

Gerald added: *I am more interested in construction, as an end in itself, than the pursuit of DX, the milli-metric stuff attracts me as mountains attract fitter men than me. There are a couple of other chaps up here interested in 24 GHz. I have two SHF 24 GHz Gunn diode modules and 30 cm dishes and am making up the Vol III RSGB 10/24 GHz IF Rx/Tx modulators to get the hang of it. Des Clift VK5ZO, has come into the act, getting a couple of the same modules and redesigning some of his older phase-lock loop stuff following my questions on frequency stabilisation given attention by W4UCH in his "The Gumplexer Cookbook".*

Ultimately I want to use SSB, of course, but have to walk before I run. However, past experience has demonstrated that getting parts sometimes takes many many months so one has to think ahead a bit.

Meteor Showers

Ron Cook VK3AFW made this comment on the Reflector: *Did anyone make use of or even see the meteor shower earlier this week? [The first week of August]. There were reports of unprecedented numbers of meteors observed in Queensland and of one which lit up the whole of Sydney!*

Unfortunately, work commitments prevented me from being around at the right times. Random meteors appear to have been more common for the last two weeks on those occasions I checked. [Any comments? ... VK5LP.]

AXM, Weather Maps, Etc

Apropos my article last month about the possible loss of weather map information, I was interested to receive a reply from a former acquaintance, Brian Tidemann, now VK3BCZ, ex VK5TN.

Here is the point of relevance. Please send your survey responses no later than 31 December 1998 marked for attention of

SRRT, to the Bureau of Meteorology by either of the following methods:

Mail: SRRT, National Meteorological Operations Centre, Bureau of Meteorology, GPO Box 1298K, Melbourne Victoria 3001. Fax: 03 9662 1223.

Please substitute Box 1289K for 1298K as written. He did say though that, "its a pretty big box, however, so I guess the mail man would probably not be confused for too long!"

Those contemplating a submission please note the new box number.

Brian also went on to say he had fond memories of the one metre days of the 1950s where he cut his VHF teeth, the same as I did, so we do have a few things in common.

From the UK

Ted Collins G4UPS, in his monthly notes, continues to rack up countries. For the first six months of 1998 he has worked 58 and heard 66 countries. That kind of scoring is somewhat different from the experiences of VK amateurs. In that time I'm not sure whether anyone here has worked a completely new country on six metres.

It's little wonder so much two metre Es is being worked in the Northern Hemisphere when there has been so much short skip on six metres. Ted mentions a case on 3 June when he worked three stations in PA at distances between 676 and 734 km.

Ted mentions Tony A45ZN in Oman having a wide range of QSOs including BV2SR, DL9USA, EK6AD, G3HBR, JS6CDB, LZ1AG, OZ3K, SM5HJL, SP6GZN, SV7BVZ, S57A, UR4LL, VR2XMT, V73AT, YO7AOT, YT1AU, Z22JE, 5B4/EU1AA and 9A8A. In there I notice four stations in the Asia/Pacific area, but so far he does not seem to have crossed the equator in this direction.

Closures

It's certainly a quiet period here in VK. Nothing really new or exciting to report. Conditions could pick up during the coming equinox but we may have to wait until March/April 1999 for something worthwhile to happen. In the meantime we keep listening to the regular signals between 45 and 50 MHz from the north, work the occasional JA - usually into VK4 or VK8, or look for tropo signals on 144 MHz and above.

Closing with two thoughts for the month.

1. An author retains the singular distinction of being the only person who can remain a bore long after he is dead, and

2. How pleasant life would be if people with money used it the way people who don't have it would use it if they had it.

73 from The Voice by the Lake.

Over to You

All letters from members will be considered for publication, but should be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents

Limited Amateurs

In recent times we have seen some relaxation in the rules and regulations governing the radio community as a whole.

I refer, in particular, to the removal of individual CB licences (replaced by a Class Licence) and to the establishment of the Novice Limited Licence or "H Call" as we've come to know it. Two giant steps for the radio fraternity, but even more so for the ACA and the WIA. Their efforts and the resultant outcomes are to be applauded.

The latter outcome recognises a willingness on the part of authorities of influence in the communications industry to make concessions, to compromise, in an endeavour to "modernise" the structure of our hobby, amateur radio. The Novice Limited Licence has afforded a new entry point into amateur radio for those who do not have a need nor a desire to operate CW.

But what of the large number of current licensed Limited amateurs, who are similarly disposed towards CW, yet have gone on to qualify in AOCPL theory, only to find that they cannot even talk on HF (except on 10 m between 29 MHz and 29.700 MHz); which means, in most cases, they cannot even take part in Club Nets, the majority of which are held on the Novice segment of the 80 m band.

Leaving aside VHF and UHF for the moment, let us compare the spectrum privileges of a Novice amateur with that of many a highly qualified Limited Licensee.

Novice, 80 m, 3.525 MHz to 3.625 MHz: Limited - Nil.

Novice, 15 m, 21.125 MHz to 21.300 MHz: Limited - Nil.

Novice, 10 m, 28.100 MHz to 28.600 MHz: Limited - 29.0 - 29.700 MHz.

Surely, if one recognises that there is a need to accommodate within the framework of amateur radio a licence without CW, there is just cause for the upgrading of HF spectrum privileges for Limited amateurs, many of whom have been Wireless Maintenance Mechanics in the services, while others are

qualified Radio Technicians who have been running their own businesses in the Communications Industry for years.

They frequently pose the question, "Why have I to be competent in 5 WPM CW to be able to talk on HF?"

Why indeed!

Roy Mahoney VK4BAY
3 Marberry Street
Manly West QLD 4179

We Need More Amateurs!

All the time we are hearing and reading of the immediate need for more entrants into the amateur radio fraternity.

What is required is a concerted Australia-wide program generated by and fully supported by the WIA Federal.

So far there have been some attempts to address this problem, on an ad hoc basis by individuals. However, the Federal Body has not shown any real interest or leadership with this initiative.

From my involvement in ARDF International over the last eight years, it has become apparent that this is the vehicle that will go a long way to solve our problem of dwindling numbers. The most important aspect is that with ARDF we can encourage YOUNG people into becoming Amateurs. ARDF has been proved to be popular in Thailand amongst youngsters.

Already there are a number of Guide/Scout groups instructing their members in the art of ARDF or, if you like, "Fox Hunting", with good results.

There are reasonably priced kits available for both 2 and 80 metres within Australia, and with the help of Amateur Radio Clubs the younger age group could be encouraged to construct their own equipment.

There are two International ARDF events coming up, the Region 3 Championships in South Korea in 1999 and, hopefully, the World Championships in the year 2000 in Australia.

Wally Watkins VK4DO
Strathfield

[While I respect Wally Watkins' view of WIA Federal's activities, he is quite wrong in saying no real interest or leadership has been taken in regard to encouraging new entrants to our hobby. The Federal Council and Executive are only too aware of the need to increase participation in amateur radio and one of the most productive areas is via the youth of the country. However, the various State Divisions have a vital role in this activity and it is in conjunction with them that WIA Federal is tackling this task. Certainly, ARDF is a wonderful way to introduce amateur radio and one that I personally fully support.]

Peter Nash VK2BPN
WIA Federal President

Just Testin' the Water - 2 m Mobile Operators.

For a number of years I have been tempted to ascertain from 2 m mobile users their opinions on just how hard it is these days to make mobile contacts when travelling throughout the country. This situation has been allowed to develop so that mobile operation in country towns and areas is almost a "non-event".

I KNOW I am not the only mobileer that has had to face up to the following maddening situation when embarking on long trips into country areas of Australia.

I have been licensed for a heck of a lot of years and all of this time I have enjoyed operation on 2 m and HF mobile operation. However, as I think many will agree, the situation now exists in ever so many country areas where the following scenario applies:

An enthusiastic amateur arrives in a town where he knows there are many familiar call signs located. He does not wish to leave the town or area without at least letting the locals know of his presence. For those that are interested, a quick "eye-ball", and maybe a beer at the local could easily follow.

However, it usually does not work out this way. Whilst it may be known that a number of amateurs are active in the town or area, there is NO WAY that the visitor can ascertain just how to contact this hidden brew of fellow operators, may of whom he may know personally. Most country amateurs have the habit of "parking" on a repeater, which may be located hundreds of km distant (and well out of the range of the poor ol' mobileer).

Calling on a simplex frequency would be like fishing in a muddy pond. The mobile operator simply does not have a clue as to how to make his presence known in the town or area. With probably many hundreds of dollars worth of radio equipment hanging from his dashboard, it is not unusual for the visitor to the area to draw a blank and proceed with his visit without making any contact with the locals. Apart from the visitor simply wanting to make a social contact with the locals, it is often the case that information is required concerning road conditions or simply directions to get to a particular place.

Unless one is involved in country mobile 2 m work, the average band user is not aware of the above-mentioned ridiculous situation. I can assure readers that the above scenario really does apply, and it can be most frustrating.

As a suggestion, what do readers think of the idea of country base stations making an effort to use a common simplex frequency for local operations (say 146.500 MHz). Sure, it would mean constructing reasonable omnidirectional aerials to get sufficient local coverage, but it would provide a means where

Silent Keys

Due to space demands, obituaries should be no longer than 200 words

The WIA regrets to announce the recent passing of:-

CE	MOULE	LS0338
F R (Frank)	JOHNSTON	VK2ADU
N J (Neil)	STEWART	VK2GS
F J (Frank)	VAN DER DRIFT	VK3COF
P W (Peter)	HEBARD	VK3XX
J O (James)	KELLY	VK3YSW
L H	WELLER	VK3YX
P J	ANDERSON	VK4CPA
H B (Harry)	ANGEL	VK4HA
D (Don)	CHRISTIANSEN	VK5ADC
R I (Robert)	SCOTT	VK5CZ
J H	CARRUTHERS	VK5HC
RF (Ron)	DENT	VK6UF
P D (Peter)	FRITH	VK7PF

Neil James Stewart VK2GS

Neil was one of our quiet achievers, a very quiet but gentlemanly perfectionist, so much so that it was one heck of a battle for me to find out much more of his past than I have learned in the quarter of a century that I have known him.

This is typified by the fact that he did not do anything in regard to getting his DXCC Open and CW until shortly before his death; he was too busy communicating and doing other things to worry about such formalities!

Neil was born at Abbotsford in 1931. He became dux of his local primary school,

visitors could at least make reliable contact when in country areas.

For those who wished to make a particular long-haul contact, that distant repeater would naturally provide the solution. However, if the simplex frequency monitoring was adhered to, it would open up the band activity to include a lot more people who shared similar interests. Even mobiles passing each other on the highway would greatly benefit from the usage of a common simplex frequency.

I feel that if something is not done to widen the scope of operation on two metres, it won't be too far into the future that interest will

already showing signs of becoming a perfectionist. He gained his early knowledge of radio from his father, who was an electrical engineer. His interest in radio continued at the local Air League, but there were so many other interests in his life, such as motor-cycling, rowing and shooting, that he did not gain his Amateur Licence until 1957. He held his current call from 1970 onward.

Neil's working life was spent as a photographer with News Limited, a total of some 37 years during which he covered all aspects of the industry from cheesecake to news to sport, including his coverage of the 1956 Melbourne Olympic Games.

Some of his sporting shots involving motorcycles were hung in The Hague. Finally, in 1971 he moved indoors to become Quality Controller of the Photographic Section, where he stayed until his retirement in 1990.

Neil's amateur radio interests centred on HF and CW, mainly on twenty and forty metres. He was also a stalwart of six metres on FM. Two metres was reserved for packet and, judging by the reams of paperwork generated, he was extremely active at it over the past few years.

He will be sadly missed by his acquaintances on these diverse media.

Neil became a Silent Key on 2 May 1998, and is survived by his wife Pam, three sons Graham VK2NKY, David and Andrew - and seven grandchildren. Vale Neil VK2GS. Bob Yorston VK2CAN

Frank Van der Drift VK3COF

Born 17 October 1928, died 18 July 1998

Frank was a long and active member of the EMDRC, who became licensed in Australia in 1978.

For many years, twice a week, he talked to his brother Nol PA0NOL, who is still residing in Holland.

One of Frank's other pastimes was his love for classical music; listening to Bach, Beethoven and Mozart, which often gave him peace of mind during difficult times.

simply disappear, and the lower usage of a much sought-after band will cause it to be lost to the commercial users, who are hungry for our little-used VHF/UHF allocations.

Does anyone have any thoughts on the above comments? Maybe everything is OK the way it is, and it's only me that is out of step!

How about some other opinions on the subject?

Sid Ward VK2SW
33 White Avenue
Wagga Wagga NSW 2650

ar

During the last five years he especially enjoyed his membership of the Probus Club, an activity which he and his wife Kaye enjoyed very much: so much so, in fact, that Frank was elected President of that organisation in 1997.

Honesty, integrity, tolerance, and reliability are virtues that are highly regarded in an individual, and Frank had all these attributes in abundance, a result not only of his strong religious convictions, but also of his high moral principle and character. Unfortunately, Frank's youth was clouded by the trauma of World War II.

During the 40s, instead of having a happy and carefree time as a teenager, it was a time of hardship and a time of trying to stay alive, very often travelling on his push-bike around the countryside to farms, to try to collect and often beg for food for his family.

Finally, on 18 July Frank lost his fight with the cancer that had invaded his body. It was a fitting tribute that many of his friends from the EMDRC were in attendance at his funeral. [Summarised from the eulogy delivered by Harry Loder VK3AXJ]

Carl Schlink VK3EMF
President
EMDR

Richard Charles (Dick) Keeshan VK4GOR

Dick VK4GOR passed away on 15 July 1998 aged 78 years.

Dick served with the RAN as a telegraphist during WW2 on the corvette "Ararat", the Q class destroyer "Quiberon", and shore stations at Madang and Brisbane.

Most of Dick's working life was in the electrical wholesale trade and after retirement he joined the Maritime Museum in Brisbane to enjoy his interest in telegraphy.

In 1990 Dick obtained his amateur radio callsign and joined the Brisbane Amateur Radio Club where he later served as President for two terms, as well as other committee positions including Club Morse tutor. Dick also contributed to amateur radio, being a WIAQ councillor for a period.

His love for CW was evident as the only time a key or paddle was not used for communication was when Dick would use a microphone to join in the Club two metre FM Net on Wednesday evenings.

VK4GOR will be sadly missed. He is survived by wife Irene, and sons William and Dennis.

Ron Everingham VK4EV
President
Brisbane Amateur Radio Club

Robert Ivor Scott VK5CZ

Ray VK5CZ passed away in his sleep on 20 June 1998 at the age of 78.

As did many of Ray's generation who served with the RAAF, he became involved with radio and with amateur radio as G3CZ.

After the war he married Iris and returned to Adelaide to set up home and acquired the call VK5CZ. From the Prospect area Ray was known by his 'BBC' radio voice.

All of his equipment was home brew, or of military origin, and operated through the 50s up to 1970.

In later years radio had to play a lesser part of his life, but was never forgotten.

Michael Scott VK5ZMD

Ronald Francis Dent VK6UF

Ron passed away on Tuesday, 30 June 1998 at his home at Wyndham in the Kimberleys, a place he loved.

Ron was known to many amateurs, operating from Christmas Island as VK9XJ. A dog pile could be expected when he gave a CQ DX call on 15, 20 and 10 m as he often did.

He also worked on Koolan Island off the north-west coast and operated a quite elaborate set-up from there.

Born in Newcastle, NSW, he came to Western Australia to practice his profession as a mining engineer after beginning his career as a boiler maker welder. Ron was respected by the many workers he had in his charge in the many places that he worked.

Ron served his country in Vietnam at a young age. He never missed an Anzac Day beer and very rarely a Remembrance Day Contest.

My best mate!
David M Laws VK6IV

Peter Frith VK7PF Life Member, Tasmanian Division.

On 25 July a great number of amateurs joined with his family and friends to pay tribute to, and give thanks for, the life of our respected life member, Peter Donald Frith who died on 23 July.

Peter had been at various times Divisional and Northern Branch President, Secretary, and Divisional Councillor.

Born in 1931, Peter was always interested in electronics. He passed his amateur operator's licence exam at the age of 14 but in those days could not operate until he turned 17.

He joined the Wireless Institute in 1949 and immediately took a very active part. He, with a couple of other amateurs was the first to span Bass Strait on two metres from a temporary station on Mt Direction, just pipping two north-west coasters by two days. They climbed Mt Barrow to have the first north-south VHF contact.

Peter was the driving force behind the establishment of what was only the second

VHF repeater in Australia on Mt Barrow, VK7RAA. After construction, it became his baby until fairly recently when severe ill-health stepped in.

He was also an ardent satellite enthusiast and was active with the early OSCAR satellites and later with AMSAT.

His marriage to Bette was one of those partnerships made in Heaven. Their family grew to two daughters and a son, Greg, who played a musical tribute to his Dad on the saxophone during the service.

Peter was for 42 years the airport radio technician at the Western Junction airport and such was his standing in that capacity that Qantas sent him twice to Zimbabwe to install the instrument landing system there.

They don't come much better than Peter Frith - we'll really miss you, mate.

To close, let me quote a tribute printed on the back of the service folder from his younger brother, Michael.

A quiet man who set by example the correct way to love and look after a lady

A man who never swore, who frowned upon the mildest form of swearing.

A caring man who always asked after our health rather than complain of his

A generous man who always gave what he could and expected nothing in return.

A man we could always look up to, who never made us ashamed of him.

A man who believed his family was more important than anything else

A man who fought with courage and dignity to the end and who loved us all unconditionally.

A man we are proud to call Dad, husband, brother and friend.

Does not that sum up the life of our life member, Peter Frith?

Vale, Peter. We your amateur friends just give thanks for your having been amongst us.

Ron Churcher VK7RN
President,
WIA Tasmanian Division

(Continued from page 20)
ing program. This program runs from DOS and could be useful if you are having mouse problems. You run the program and it allows you to move the pointer to various points on the screen to test the left and right buttons, etc. At the end of the test you click on 'Exit'. However, if the mouse does not work you cannot click on 'Exit' to exit the program! There are no keyboard commands to exit the program. All you can do is turn the computer off!

Computers, ugh!

Technical Correspondence

All technical correspondence from members will be considered for publication, but should be less than 300 words.

Return Loss

A rather rash statement was made, "serves no useful purpose in radio technology", in *Technical Correspondence* in the July 1998 issue of *Amateur Radio* magazine.

"Return Loss" is another expression of reflected power from a termination and is still in common use.

(An example, supplied but not reproduced here, is from a test equipment catalogue, showing various figures of return loss across the bands covered by a professional RF wattmeter. Ed)

John Grace VK2ZCG
9 Fauna Place
Kirrawee NSW 2232

Return Loss Revisited

Whilst I agree with Mr Lawless that "return loss" finds little use in amateur radio terminology, (*Technical Correspondence*, *Amateur Radio*, July 98), I most heartily disagree with his assertion that "return loss" serves no useful purpose in radio technology.

Return loss, reflection coefficient and VSWR (voltage standing wave ratio), are all ways of expressing the degree of mismatch exhibited by a load being used at radio frequencies. It matters little if the point of measurement is adjacent to the power source looking towards a transmission line terminated in an antenna or dummy load or alternatively at the end of a transmission line looking towards an antenna.

Return loss is the most self explanatory term of the three. Return loss is simply the amount in dB by which the forward power exceeds the consequent reflected power at the point of measurement. Or, put another way, the attenuation from the point of measurement to the load and back for the reflected signal. For example, if, at the point of measurement, the forward power is 100 watts and the reflected power is one watt then the forward power is 100 times greater than the reflected power. This equates to 20 dB return loss. The figure is quoted as a positive value because it is expressing a loss. If return "gain" were used it would be more correct to state the figure as -20 dB.

The "reflection coefficient" is simply obtained by performing the following:

$\sqrt{\text{Reflected Power/Forward Power}}$

It may be quoted as a decimal fraction or a percentage and, in the example given above, is equal to 0.1 or 10%.

The VSWR is the ratio of maximum to minimum voltages which appear as a cyclic stationary pattern on a transmission line, not less than 1/4 wave length long, as a result of interaction between the forward wave and the reflected wave. It is numerically equal to $(1 + \text{Reflection coefficient}) / (1 - \text{Reflection coefficient})$. In the above example this equals $(1 + 0.1) / (1 - 0.1) = 1.22$.

VSWR is the usually accepted measurement when testing the quality of matching of impedances of source/feedline/antenna for narrow bandwidth transmissions, such as amateur HF and VHF, and commercial HF, VHF and UHF mobile systems.

Typical VSWR meters actually use a directional coupling to sample the magnitude of the currents related to the forward and reflected power transfer and display this on a meter which has been calibrated to read in VSWR.

With broad-band radio systems in the semi-microwave and microwave region, the system uses a far greater chunk of the spectrum than that resulting from SSB or phase modulation by a single voice channel. Typical frequency division multiplex modulation on a broad-band system will carry 1200 channels, each 4 kHz wide, or the system may carry a 6 MHz video signal and will thus require the antenna system to be adequately matched over a much wider range of frequencies. Digital systems usually use even greater bandwidth than the older analogue systems.

Many of these systems have RF power outputs of only around four watts so antenna characteristics are important. One antenna will handle both the transmit and receive frequency band with some separation between them.

With such systems return loss is a more suitable method of expressing the quality of the matching. A return loss bridge coupled with a sweep generator and CRT display allows the return loss to be displayed, with frequency markers, for the required bandwidth of the antenna system. Such a measuring system also facilitates the adjustment of the primary antenna position and any other necessary adjustments. It also allows for a photograph to be taken of the characteristics

of the feeder/antenna combination on initial installation. This is then used for future reference if it is suspected that deterioration has occurred.

Another interesting point to note is the better readability of return loss compared with VSWR at low values of reflected power, eg as the VSWR reduces from 1.22 to 1.10, the return loss increases from 20.0 dB to 26.4 dB.

W H Pickering VK4WP
10 Marina Parade
Ingham QLD 4850

How Low Can You Go

In the article "How Low Can You Go" on page 20 of the August 1998 issue of *Amateur Radio*, we have an excellent presentation of the radiation patterns of an 80 m dipole at various heights.

These computer simulations do not include ground losses, which would show the 1.8 m high pattern some 8 dB worse off than the 13 m one! While, as stated, the 1.8 m high antenna is a quite useful radiator, an increase in height to 1/20 wavelength (4 m) is a worthwhile improvement of 4 dB while not requiring excessive masts in a suburban backyard.

However, while discussing the DX uses around 1000 km distant, NO MENTION was made that the maximum radiation, toward 30 degrees from the vertical, can fill in the "skip distance" from 30 to 600 km for some 22 hours a day on 80 metres!

Ionospheric reflection in these temperate latitudes rarely fails, except for the two hours before dawn, while "absorption" has little effect on this band. Check this out with the HF Frequency Prediction Charts from the IPS Radio and Space Services.

This is the type of propagation supporting all those "local" nets around the country, every day, all year, during this low of the sunspot cycle when most DX is on 20 metres!

Reference: 'Low Radiators and High Ground Planes', *Amateur Radio*, November 1994.

William A McLeod VK3MI
42 Capon Street

WIA Call Book 99

The latest listings of over
16,000 Australian radio
amateur callsigns.

Bonus "Callsigns on Disk"
supplement available for
only \$10!

WIA Divisions News

Forward Bias — VK1 Notes

A somewhat more verbose column this month to make up for our absence last month, said absence being a result of an absent minded columnist, I'm afraid.

While we're talking about the column, does it meet your needs? Apart from the observation that it didn't appear for a couple of months from two people who indicated they missed it, there has been very little feedback.

I'm not chasing praise but, if you have any comments, suggestions or contributions are most certainly welcome!

The Silence is Deafening

Having last month availed myself of 70 cm capability, I'm astonished at how little usage our two excellent repeaters on this band receive. Surely we can do better than this?

The device on Black Mountain, VK1RBM on 438.525 MHz, gives exceptional coverage within the city, even with the modest 300 mW output of the IC-Q7A.

The linked repeater on Mt Ginini, VK1RGI on 438.375 MHz, is accessible with only slightly more power and/or a decent antenna, the linking providing a fantastic opportunity to converse with fellow operators far further afield than one might otherwise.

As some have observed, the recent availability of ex-commercial 2 m capable equipment is seeing more of these units consigned to the vehicle whilst the more sophisticated dual band hardware gets put in the shed, where I suspect it remains unused. Whilst this change may preclude use of 70 cm on the way to and from work, a length of RG-213 (or even RG-58 if you keep it short) and a coat hanger wire quarter wave will provide noise free performance into the local repeaters from most locations around town.

The old adage of "use it or lose it" is frighteningly real in respect to our 70 cm allocation. The great efforts of the ACA liaison team can only be bolstered if it's clear the band is in use!

Time to get out the radios, folks! Most people have at least a modest 70 cm set-up, now don't they? Besides, I want someone to talk to on a channel free of papers!

1998 Technical Symposium

Thanks to the efforts of Mike VK1KCK, and the rest of the Technical/Packet radio group, the group will be presenting the 1998 VK1 Amateur Radio Symposium on Sunday, 22 November at the Mount Rogers Scout and Guide Halls in Charnwood.

Mike indicated that there are already sufficient speakers for one of the two streams planned for the event. More speakers are welcome and can contact Mike for more information on getting involved (mikew@netspeed.com.au or QTHR).

Interstate visitors are always welcome to present a session or attend the symposium itself (or both)! Plans are underway to provide some foxhunts on the Saturday afternoon and a dinner venue for the Saturday night. These events have been a tremendous success in the past and this year's is shaping up to go one better. Don't miss it!

Next Meeting

Our September meeting will be on Monday the 28th. The topic is to be determined but a quick listen to the broadcast or glance at the Web site will bring you up to speed. Look forward to having a 'cuppa' with you then.

Hugh Blenkins VK1YYZ

VK2 Notes

Olympic Games Trial Frequencies

Since the last issue of *Amateur Radio*, this Division received a letter from the Sydney office of the Australian Communications Authority requesting our comments on the temporary allocation of two frequencies in the amateur segment of the 70 cm band. The frequencies had been requested by the Olympic Games organisers for trials during September of this year for the sailing events to be held on Sydney Harbour. The trials are to enable an assessment to be made as to the suitability of the equipment planned for use in the year 2000.

Contrary to what was reported by various 'enlightened sources', the ACA had not allocated, nor had they, at the time of writing these notes, agreed to any specific frequencies. Two frequencies had been suggested by the organisers and the ACA wrote to us asking for our comments as to their suitability. It must be pointed out that the equipment to be used for these events is designed for a range of European frequencies which fall into part of the Australian 70 cm band.

Many of you will recall that our President, Michael Corbin VK2YC, in one of his Sunday broadcasts advised listeners of the request and, in fact, asked for input from our

members for consideration before we formally replied to the ACA. Many members took the time to respond to Michael's request, for which the Council says a sincere 'thank you'.

Now I think we should get this completely into perspective. This was ONLY a request by the ACA for VK2 comments on a series of trials which would be localised to the immediate surrounds of Sydney Harbour for a short, temporary period in September this year. There was never any indication that this would be an on-going situation. In fact, it may be found that the frequencies in question are totally unsuitable.

A response to the ACA request has been sent giving our recommendations as to which pair of frequencies we consider to be most suitable. Our response also included a number of concerns raised by our members and a request that the Divisional Council be kept fully informed of developments.

The ACA has now assured this Division that we would be involved in future discussions on any aspect of the allocation of frequencies for the Games.

Council will keep members informed, so listen to the Sunday broadcasts for future updates.

Membership Drive

The prize of an ICOM 706 Mark II, kindly donated jointly by ICOM Australia and Amateur Transceiver Radio Centre of Girraween, NSW, is proving popular, with a steady stream of requests for membership applications being received by the office since the prize draw was announced in mid June. Incidentally, Les VK2MPZ, the owner of ATR Centre in Girraween, is a member of the VK2 Division, and a staunch WIA supporter. So, when you want that piece of new equipment, give Les a ring - you'll find his advertisement elsewhere in this magazine.

The prize will be drawn at the Annual General Meeting in April 1999; any new applications received before 26 March 1999 will go into the draw.

Dural Facelift

Our Broadcast Facility at Dural has been given a facelift! The exterior woodwork of the building has been fully prepared and repainted.

The out-buildings have also been painted and the smaller, most frequently used one, is now positively dazzling inside! So, if you've gotta go, wear your shades!

More up-dating and refurbishing is being planned for the future to greatly improve this marvellous facility. Some equipment has already been replaced and the next item is probably to paint the interior of the main building.

Membership Due?

Finally, a reminder to all VK2 Members. If your membership was due for renewal on 1 July, and you haven't yet paid your fees, please do so as a matter of urgency to ensure that you continue to receive *Amateur Radio* magazine.

Don't forget you do not have to send your renewal notice to the Federal Office in Melbourne. You can pay in Parramatta either by cash, cheque, money order or credit card - you can even phone or fax your renewal if paying by credit card.

If you are unsure when your renewal is due, call the office on 02 9689 2417 or, outside the Sydney metropolitan area, use our Freephone number 1800 817644. The office fax number is 02 9633 1525.

Eric Fossey VK2EFY

Division Secretary

WIA Victoria News

Future of Morse code

The issue of whether Morse code proficiency should remain a mandatory requirement in amateur radio licensing continues to be hotly debated throughout the world.

The Radio Society of Great Britain (RSGB) has a clear policy to seek its abolition through the World Radio Conference, and wants to lower the Morse code requirement for British licensing as soon as possible. Other European radio societies may voice their views in coming months.

Most recently the American Radio Relay League (ARRL) proposed a restructure of its licensing system which, among other things, would reduce the emphasis on Morse telegraphy proficiency.

Like the RSGB, the ARRL's stated motive for promoting change is to make the hobby more attractive to a wide range of potential radio amateurs.

In Australia, where debate about Morse code continues, thought is also being given to changing the licence structure. Advocates of such change want to simplify the licence structure in the belief that this would attract more newcomers. Another driving force is to lessen the administrative burden amateur radio places on the Australian Communications Authority.

The RSGB in a recent statement said that the original requirement for Morse code in amateur licensing seems to have stemmed from three sources:

- The fact that Morse code was a prime transmission mode half a century ago.

- The need for a "lingua franca" to allow commercial stations to ask amateur radio

stations to close down should they be causing interference.

- The fact that Morse code made communications possible across language barriers.

These three basic points are certain to be the core of the argument by those wanting an end to Morse code proficiency, while those seeking its retention are likely to argue that Morse code continues as a licence requirement because:

- The mode provides a ready means of communication in times of disaster.

- A total end to Morse code proficiency will take away a major difference between amateur radio and CB radio, and lead to a merging of the two hobbies.

- The fact that Morse code makes communications possible across language barriers.

The issue is not simple. It generates a lot of personal emotion. Any change in the Morse code requirement automatically means a restructure in the number of licence categories, and their operating privileges.

Those wanting a "status quo" retention of Morse code not only have to do battle with the *Morse code Abolitionists*, but now also the emerging *Licence Reformists*. A middle ground compromise is the retention of Morse code for full access to HF at a proficiency of five words per minute.

WIA Victoria will be guided by its members when the time comes to revise its policy on the Morse code issue. It has decided to survey the membership again on the issue in mid-1999.

Eyes on WIA Federal

A draft business plan for the ongoing operation of the WIA Federal Office and the WIA Federal Board of Directors is expected to be available for comment soon.

WIA Victoria is looking forward to seeing in writing the details of the plan which comes mid-way through the term of the current WIA Federal Board of Directors.

The WIA Victoria Council appreciates the difficulties faced in financing the WIA Federal operation which includes rising costs.

There is a need in the current economic climate to stabilise the membership fees. While it is desirable to preserve the WIA federation, this must not be at the cost of damaging the financial stability and strength of WIA Victoria.

We are mindful that any fee hike would adversely affect our substantial number of very loyal older members.

Car Locked Out

A total of 130 imported European cars recently landed at Elizabeth in South Australia were fitted with 70 cm radio key

locks. This caused headaches for technicians who were trying to ready them for the local market.

WIA Victoria was asked to exercise its influence to find a quick solution to get the cars moving to distributors who had waiting buyers. Our CEO Barry Wilton VK3XV politely reminded the car importer that the automotive industry had been warned about the problem, and apparently not taken the matter seriously enough.

The European radio security systems are incompatible with Australian radio frequency standards. The 70 cm regenerative receivers used in the vehicles have broad band front ends and we understand this is causing widespread problems.

Jim Linton VK3PC

Division President

VK5 and VK8 Notes

Divisional Council

Here are details of the positions for the Divisional Council for the current year. This information was provided at the July General Meeting of the Division. President, Ian Hunt VK5QX; Vice Presidents, David Burnett VK5AXW and Phil Pavey VK5VB; Secretary, position vacant; Assistant Secretary, Graham Wiseman VK5EU (Acting Secretary); Treasurer, Joe Burford VK5UJ; Federal Councillor, Jim McLachlan VK5NB; Alternate Federal Councillors, David Burnett VK5AXW and Ian Watson VK5KJA (co-opted); Minute Secretary, Don Christiansen VK5ADC; Membership Secretary, Tony van Lysdonk VK5WC; Education Officer, Tony van Lysdonk VK5WC; and Recruitment Officer, Michael Gell VK5ZLC.

The position of Clubs' Liaison Officer will continue to be filled by Jim VK5NB who will also remain as Chairman of the Constitution Review Committee.

As Ian VK5KJA had been on Council from the time of the Annual General Meeting by virtue of his office as Federal Councillor, it was necessary that he now be "co-opted" to allow him to remain on Council and thus provide continuity on the basis of his previous position.

Burley Griffin Building (BGB)

The general position as described in last month's issue of *Amateur Radio* regarding our occupancy of the Burley Griffin Building, located within the old Thebarton Council Depot, still prevails; however, there have been some interesting developments.

Based on a "tip off" from a member, I arranged an interview with Dr Reece Jennings who is Acting Mayor of the West Torrens

Council. He was most interested in the explanation of our present situation and asked for copies of various documents concerning the issue. Copies of briefing material which had been produced so as to provide background to the issue in hand, and to boost our case, were provided for each of the 16 members of the West Torrens Council.

Dr Jennings then directed that the matter be placed on the agenda for the coming meeting of the City Council and also requested that I address the Council regarding our occupancy. He also suggested that, as a show of support, we could have several members present as a deputation. This was arranged accordingly.

I provided a presentation of about 10 minutes duration to the Council during which I was able to cover the major aspects of our operation in the BGB Headquarters and the desirability of our being able to continue our occupancy. Amongst the aspects covered was an emphasis placed on the usage of the premises as a hub of the Adelaide Local Area Net within the Packet Radio system, the viability of the site as an emergency communications centre which houses VK5WI, and the convenience of a secure location with 24 hours per day access in a non-residential area.

This presentation appeared to be well received, with Dr Jennings having introduced the matter by suggesting to the Council that the WIA is a well respected body and that during the years we had shown ourselves as being most responsible in all our dealings with the Council. He suggested that we should be given very favourable consideration.

Another member of the Council, pointing out that he had been Mayor of the Thebarton Corporation, spoke in glowing terms regarding the WIA and also urged Councillors to strongly consider a decision in our favour. Some questions were asked and answered and indications were given by several other members of the Council that the presentation was well done.

Following this event an eight page booklet in A5 format has been produced. This explains many aspects of amateur radio, and also provides details as to the value of the hobby to the community. A copy of this document, together with an individual letter which provides further material to support our campaign, has now been sent to each member of the West Torrens City Council (copies of this booklet will also be useful as a general information document to be placed within schools and in other areas where information on amateur radio may be useful.)

At a City Council Meeting to be held on 18 August, a report composed by employed officers of the Council dealing with the matter of the sale of the old Council depot, will be

presented. One would assume that the elected Council members would not make snap decisions based on the report or its contents, but rather that they would require a period of time to consider any options and ramifications of any proposals made. We thus expect that some time will elapse before a final decision is made known.

Meantime, we will continue to monitor progress and to lobby the Council members where possible. You will be advised further as information becomes available.

Subsequent to the West Torrens City Council Meeting, I was approached by a newspaper reporter who was interested in the story. This resulted in the publication in the *Weekly Times Messenger*, the local area newspaper, of a front and third page photograph and three separate articles dealing with the Burley Griffin Building from a historical point of view, the fight by the WIA VK5 Division to stay put, and a description of amateur radio contacts with Andy Thomas on the Space Station MIR.

Coming Meetings

The General Meetings of the Division occur on the fourth Tuesday of each month.

At the September meeting we will receive a presentation from a member of the Telstra National Communications Team. This team comprises personnel from the Telstra organisation who are available to speak on a wide range of subjects, ranging from the 'History of Telecommunications' to 'Telephone Re-Numbering' and 'Disability Services'. At the September General Meeting the subject will be 'Telecommunications Into the 21st Century'.

I extend my best wishes to you in your activities and also on behalf of the Divisional Council.

*Ian Hunt VK5QX
Division President*

VK6 Notes

Well, the Avon Descent has come and been, now for the RD Contest this weekend! Hope we had fun with great propagation for the event.

Two Metres FM

What do you think about the FM Field Day contest to be held on Sunday, 20 September at 12.30 pm local, which was so thoroughly detailed by Chris VK6KCH in the August *VK6 Notes*? Will you get involved?

I know that, if at all possible, I certainly will be because:

(a) I want to do whatever I can to support our great hobby, raise the general level of

activity on 2 m FM (albeit briefly, this is only a four hour event), encourage my fellow amateurs to "come out of their shells" and gain the confidence to use their VHF gear to its full potential (ie this is a simplex event, so you are not broadcasting!); and

(b) I just want to have some serious fun. What a great excuse to drive up the hill and get stuck in the gully.

It will be interesting to see what sort of response and activity this event draws.

Mobile in Perth

I had been told that Perth locals would only answer your call on 2 m repeaters if they knew you, and that the usual thing was for the same people to talk to each other in small "exclusive" groups.

On a recent six week work assignment, during which I commuted from Toodyay to Perth every day, I found quite the opposite situation. My calls were nearly always answered, by many different people, and the "groups" were, in fact, very "inclusive" if you wished to participate.

I guess the important thing is to dispense with any shyness or "mike fright", put out several calls, identify the repeater you are on (most FMers are scanning many frequencies), and certainly don't even think about what you are going to say. Just do it!

What's Happening on 80 m?

I suppose TV, satellite TV, Internet, work and family pressures generated by the pace of life in the 1990's are what's happening. But it's a very worrying trend.

VK6 Council Minutes

August 1998. Just a brief synopsis of points of interest (*the italics are mine*).

A publicity poster for placement at radio retailers is being arranged (*great work - now how about taking out a full page ad in the national newspaper, and a TV ad in the middle of the news break?*!).

Difficulties are being experienced in arranging exams. To encourage the supply of invigilators, the VK6 Division will pay the \$10 invigilators application fee (*why does anybody have to pay anything in the first place?*)

The Secretary advised that the Divisional bookshop is now housed at the premises of Tower Communications in Hazelmere, telephone 08 9274 1118.

There was considerable discussion about the possibilities of the Institute acquiring a small parcel of land in an elevated position which could provide a good VHF/UHF location for a variety of applications.

The VHF Group proposal for extensions to the Novice access to the narrow band portions of VHF bands is probably deferred

Meeting Activities

All our three branches are striving to keep the interest of members over the winter months with special visits, practical nights, etc. Both the North and North-west Branches had practical meetings in August, the North making G5RV wire antennas together with theory discussion and the North-west branch combining antenna construction with a barbecue at the home of the Secretary, John Klop VK7KCC.

USS Stennis Visit

All the hopes of the Southern branch for a visit to the aircraft carrier were dashed when, because of 'greeny' protests over nuclear power, and the danger of mayhem if any got aboard, all public visits were banned. We're still hoping for visits in the future.

Repeaters

Winter has really played havoc with the Northern Branch repeaters on Mt Barrow and Mt Arthur. Joe VK7JG and Tim VK7TIM have spent countless hours (plus much cost) ploughing through two feet of mountaintop snow to keep the repeaters on the air. To quote the classics, "their blood's worth bottling!"

The new UHF repeater sited at the Domain Centre in Hobart is doing a fine job.

"Saxon Safari" Car Rally

The Hobart WICEN group did an outstanding job of communications organisation for this rally with congratulatory comments from the organisers and participants. Looks like they could have a much greater involvement in next years rally. Congratulations to the 15 amateurs involved.

Publicity

Following a series of interviews, etc on the national station 72R earlier in the year, we are getting requests to provide speakers for meetings. The latest is from the CWA for their Hobart meeting. The members in Hobart felt that the one person to do this admirably was Bill VK7WR whose ability to 'wow' the ladies caused him to be elected as the 'volunteer'. We've got absolute confidence in you, Bill.

Ron Churcher VK7RN
Division President

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(Continued from page 26)

Just received into our collection is the QSL YK0A which gives prefix hunters yet another new one. This was a DXpedition courtesy of the Northern Californian DX Foundation and Omar YK1AO. Let us hope that there will be more activity from this rare spot in the future.

What's New?

New products of interest to radio amateurs

For those amateurs who are interested in audio or HDTV, Belden Australia have announced the introduction of a new series of cables for use in these instances.

There are two 75-ohm cables, one of which, the 1855A SDI Precision Video Coax, is 30% smaller in diameter and lighter in weight than standard RG-59/U cables, and so is ideal for mobile use or where space and weight restrictions apply. It is capable of transmitting SMPTE signals up to 61 metres with maximum clarity and reliability.

If longer distances are required, then the 7731A (RG-11/U) type cables should be used. Both cables are available in a range of colours, thus facilitating interconnection where signals may be coming from a number of different sources.

Also available is their Belden 1883A line level Analogue Audio Cable, a single twisted pair cable designed for permanent or semi-permanent multi-channel professional audio installations. It features 100% shielding and, like the coax cable above, is available in a range of colours.

Their third product, Belden's Audioflex Single Pair cable, is highly flexible, intended for use as a patch cable and as a high performance studio or stage cable. It features double spiral bare copper shields tied together into one weave, and is claimed to provide a 50% reduction in triboelectric and microphonic noise over standard cables.

These cables should be available from our regular advertisers.

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Thanks

The Federal body of the WIA would like to express its thanks to the following for their kind donation of QSL cards to the National Collection: Bill VK6XA, Brian VK4LV, Geoff VK2OI, Lindsay VK5GZ, and Hans SWL L40370. Also to the relatives and friends of the following 'SK' for their kind donation: Lindsay Stephens VK2ACO, courtesy of Duncan VK2DLR.

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for at least three years following the Federal resolution that only unrestricted licence privilege extensions would be dealt with for a three year period (this is extremely disappointing - how do these anti-growth resolutions come about?).

The proposal that it be WIA policy to seek primary frequency segments in bands above 144 MHz is to be followed up by the Federal Councillor.

Concern was expressed that there had been no meeting between the Federal Liaison Committee and the ACA for at least 12 months.

Keith VK6XH reported that there had been only low interest in the Whiteman Park project.

(The reference above to meetings of the Federal Liaison Committee made by the VK6 Council are not correct. There have been many contacts by members of the Committee with the ACA, in person, by telephone and by correspondence. Many issues relating to the Amateur Radio Service have been progressed during the past months but there remains much work to be done in this vital area. The support of all Divisions is important if the voice of the WIA is to be fully effective. Peter Naish VK2BPN, Chairman of Federal Liaison Committee, member of Federal Executive.)

WARG

August meeting notes. VK6ZLZ reported that there are currently 114 financial members (good effort).

There has been a reply from Worksafe regarding volunteers climbing WARG masts on farm or private land. The Secretary is to write to the owners of the RBN site enclosing a copy, and pointing out that, although commercial climbers on the tower would require to be licensed by Worksafe, the letter excluded amateur volunteers from these regulations (no excuse now not to be the first to volunteer to strap on the climbing belt!).

It was reported that there appeared to be a problem with the 70 cm repeater RTH at Tic Hill. The ident level is down and the two metre repeater is 3 kHz high.

It was decided that the Tait conversion project should be completed before the group attempted to link RAV Avon Valley back to Perth. However, a UHF antenna should be mounted on the tower to check if a signal from RUF was available to the site (I am keen to help with the RAV project and will wear the belt if no one else will!).

Chris Lowe VK6BIK

WIA Call Book 99

Order your copy now!

Club News

VK1 Amateur Radio Symposium

The Canberra Amateur Packet Radio Group (CAPRG), in conjunction with the VK1 WIA, is planning to hold the next VK1 Amateur Radio Symposium on Sunday, 22 November 1998 at the Chamwood Scout Hall.

If there is enough interest a fox hunt will be arranged for the Saturday afternoon and a dinner for the Saturday night.

Any amateur interested in making a presentation or attending the Symposium is invited to get in contact with Mike Walkington VK1KCK by e-mail to mikew@netspeed.com.au by packet to VK1KCK@VK1BBS or by mail to 17 Ogden Ct, Fadden ACT 2904. Further details will be advised in the coming months.

Mike Walkington VK1KCK

Radio Amateur's Old Timers Club

The September luncheon of the Radio Old Timers Club (RAOTC) will be held at the extensively refurbished Benteigh Club on Tuesday, 8 September at 1 pm. The Club is located in Yawla Street, Benteigh.

The guest speaker will be Mr John Richards, a senior QANTAS engineer responsible for the planning of the company's facilities at airports around the world.

Visitors from other clubs are welcome subject to firm bookings with Arthur Evans VK3VQ not later than Wednesday, 3 September. Arthur's address is 237 Bluff Road, Sandringham 3191, and his phone number is 9598 4262.

RAOTC membership is open to amateurs who have held, or have been qualified to hold, an amateur licence for 25 years or longer. Age is definitely not a qualification!

Allan Doble VK3AMD

Melbourne Packet Radio Group Inc

In recent times there have been a couple of events which have changed the face of packet radio in Melbourne.

The first was the closing down of the VK3RUM wormhole which provided most of the connectivity for keyboard to keyboard

contacts with the world and international mail and bulletins. This was brought about by legislation which came into effect on 1 January this year. At present we have no other facility available to replace this service as the alternatives require ongoing funding to pay for a permanent Internet connection. With the low level of support received from the users of the network, we would be foolish to commit ourselves to additional expense (all membership applications and/or donations gratefully accepted!).

The second event was brought about by the first. The gear that was removed from VK3RUM has been relocated to provide a full duplex link between VK3RPS at Mt Holden and VK3RPA/VK3BBS at St Albans to replace the previous half duplex link which was becoming clogged with traffic. The improvement has been excellent. If you are using TPK type programs to collect headers from VK3BBS your new route will be VK3RPS-2, VK3RPS-10, VK3RPA-10 on 147.600 MHz 1200 baud or VK3RPS-7, VK3RPS-10, VK3RPA-10 on 434.050 MHz 9600 baud.

The next meeting of the Group will be at 1930 hours on Monday, 14 September at the Moorabbin and District Radio Club rooms, Turner Road, Highbury in Victoria (Melways 77 J9). All are welcome. Enquiries should be addressed to MPRGI, PO Box 299, St Albans, VIC 3021, or via packet to MPRGCM@VK3BBS.#MEL.VIC.AUS.OC Peter McEwen VK3FEE

Gippsland Gate Radio and Electronics Club

GGREC members would like to thank all who made their Hamfest such a success on Saturday, 18 July. Numbers exceeded our expectation and we thank all sellers and buyers for their support and patience in rather crowded conditions. Plans are already underway to increase the available space for next year and we look forward to your support again in 1999.

GGREC meets in the Guide Hall, Grant Street, Cranbourne (Melways ref 133 J6) on the third Friday of each month at 8.30 pm. We also have an informal meeting on the first Friday at 8.30 pm when projects can be worked on, information shared, or just coffee and a chat.

We have a varied program of meetings, talks, and activities for the whole family (camping, 4-wheel driving, bowling, skating, meals, etc). Club members are also active in

Stolen Equipment

The following equipment has been reported stolen. If you have any information that may lead to the recovery of the equipment, please get in touch with the advised contact as soon as practicable.

Make:	Kenwood
Model:	TS-850
Serial Number:	Unknown
Type:	HF transceiver
Accessories:	Microphone
Modifications:	Nil
Stolen from:	Home QTH
Date:	31 July 1998
Other items taken:	Jewellery, travellers cheques, cash
Reported to:	Box Hill Police
Owner:	Tuck C Choy
Call sign:	VK3CCA
Contact details:	tuck@sci.monash.edu.au

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Slow scan TV, Amateur TV, and on VHF and HF (both SSB and CW).

We also hope to be able to run a course in amateur radio starting early next year. Also, we will be participating in JOTA as VK3GGC.

New members and visitors are always welcome at any of our Club meetings. In the meantime, why not visit our Internet site at <http://avoca.vicnet.net.au/~ggrec>.

Pat Pavey VK3OZ
Secretary

Radio Amateur's Old Timers Club of South Australia

The Annual Luncheon will be held on Thursday, 22 October 1998 at the Airport Club, James Schofield Drive, Adelaide Airport (opposite the International Airport) at 11.30 am for a 12 noon start.

RSVP before 18 October to: President, Jack Townsend VK5HT on 8295 2209; Secretary, Ray Deane VK5RK on 8271 5401; or Assistant Secretary, Lew Schaumloffal VK5AKQ on 8263 0882.

Those using public transport should take the TA bus 278 to stop 9.

Ray Deane VK5RK
Secretary

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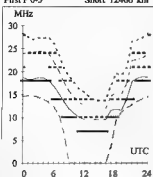
Call Book 99

On sale next month!

Adelaide-Anchorage

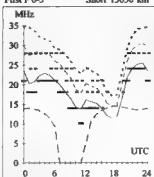
30

First F 0-5 Short 12466 km

**Brisbane-Lima**

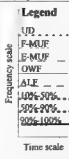
122

First F 0-5 Short 13056 km

**September**

1998

T index: 90

**HF Predictions****Evan Jarman VK3ANI**

34 Alendale Court, Blackburn VIC 3130

These graphs show the predicted diurnal variation in key frequencies for the nominated circuits.

The frequencies, identified in the legend, are:-

- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency

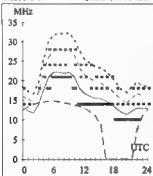
Also shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when useable. The predictions were made with the Ionospheric Prediction Service program ASAPS version 4. The path, propagation mode and Australian terminal bearing are also given for each circuit.

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Adelaide-Budapest

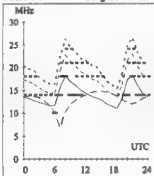
305

First F 0-5 Short 14908 km

**Brisbane-London**

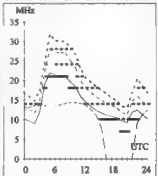
147

First F 0-5 Long 23496 km

**Canberra-Lusaka**

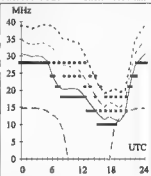
239

Second 4F3-5 4E0 Short 11620 km

**Darwin-Honolulu**

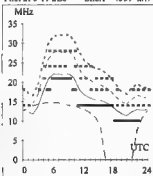
65

First 3F3-8 3E0 Short 8636 km

**Adelaide-Suva**

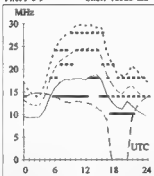
75

First 2F8-11 2E0 Short 4339 km

**Brisbane-London**

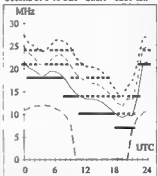
327

First F 0-5 Short 16526 km

**Canberra-Manila**

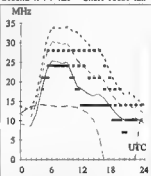
327

Second 3F8-15 3E0 Short 6286 km

**Darwin-Johannesburg**

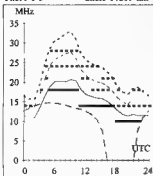
241

Second 4F4-7 4E0 Short 10639 km

**Adelaide-Warsaw**

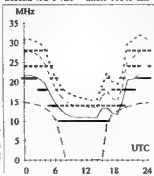
312

First F 0-5 Short 14819 km

**Brisbane-Seattle**

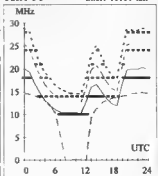
44

Second 4F2-6 4E0 Short 11845 km

**Canberra-Ottawa**

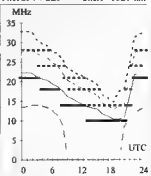
59

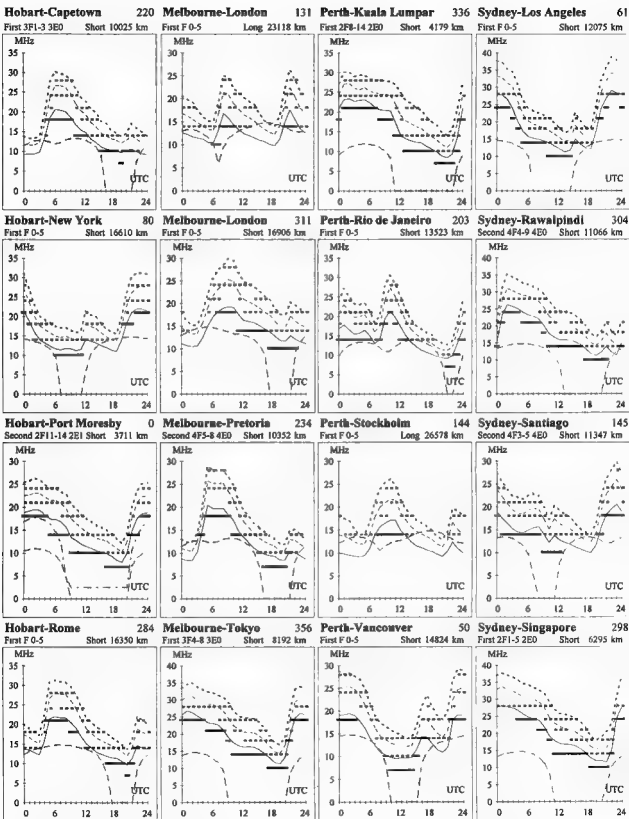
First F 0-5 Short 16100 km

**Darwin-Wellington**

135

First 2F4-7 2E0 Short 5321 km





HAMADS

• Hamads may be submitted on the form on the reverse side of the *Amateur Radio* address flysheet. Please use your latest flysheet where possible.

• Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the form on the back of the *Amateur Radio* address flysheet.

• Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.

• Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.

• WIA policy recommends that the serial number of all equipment offered for sale should be included in the Hamad.

• QTHR means the address is correct in the current WIA Call Book.

• Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

• Commercial advertising (Trade Hamads) are pre-payable at \$25.00 for four lines (twenty words), plus \$2.25 per line (or part thereof), with a minimum charge of \$25.00. Cheques are to be made out to: WIA Hamads.

• Copy should be typed or in block letters, and be received by the deadlines shown on page 1 of each issue of *Amateur Radio*, at:

Postal: 3 Tamar Court, Mentone VIC 3194

Fax: 03 9584 8928

E-mail: vk3br@e031.acne.net.au

TRADE ADS

● AMIDON FERROMAGNETIC CORES:

For all RF applications. Send business size SASE for data/price to RJ & US Imports, PO Box 431, Kiamia NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiamia). Agencies at: Assoc TV Service, Hobart; Trusmits Electronic World, Melbourne and Mildura; Alpha Tango Products, Perth; Haven Electronics, Nowra; and WIA Equipment Supplies, Adelaide.

● WEATHER FAX programs for IBM XT/ATs

*** "RADFAX" \$35.00, is a high resolution short-wave weather fax, Morse and RTTY receiving program. Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder *** "SATFAX" \$45.00, is a NOAA, Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, +137 MHz Receiver, *** "MAXISAT" \$75.00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 768 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3.00 postage. ONLY from M Delahund, 42 Villiers St, New Farm QLD 4005. Ph 07 358 2785.

● HAM LOG v3.1 - Acclaimed internationally as the best IBM logging program

Review samples. AR: "Recommend it to anyone" The Canadian Amateur "Beyond this reviewer's ability to do it justice. I cannot find anything to improve on. A breakthrough of computer technology" AR: "Brilliant" Simple to use with full help, the professional HAM LOG is immensely popular (now in its 5th year), with many useful, superb features. Just \$59 (+ \$5 P & P), with a 90 page manual. Special 5 hour Internet offer. Demos, brochures available. Robin Gandevia VK2VYN, 02

369 2008 BH, fax 02 369 3069. Internet address rhg@ozemail.com.au.

FOR SALE ACT

● Tower, triangular lattice, four section, erects 8'15/22/29 m guyed, bottom has rungs and 40 cm baseplate, suit 150 mm tube, \$850 neg. collect. Peter VK1KEP, 062666 4671.

● Surplus to requirements: Signal Generator TS-418, 400 to 1000 MHz, 2 microvolt to 200 millivolt, 50 ohms, 110 V AC. Also HP606A, 50 kHz to 65 MHz, 0.1 microvolt to 3 volt, 50 ohms. Any offers? Peter VK1CPK, 062631 1790, pliotoppen@dynamite.com.au.

FOR SALE NSW

● Deceased estate - Neil Stewart VK2QGS: Yaesu FT-208 txcvr, \$200. EA (Altronics K2517) 1 GHz frequency counter, \$100. EA (DSE K3436) 200 MHz frequency counter, \$50. EA (Jaycar KA1742) audio oscillator, \$50. Silicon Chip (Altronics K2524) 4 digit capacitance meter, \$50. AVO MK II valve tester, \$200. All are complete, working, with (mic), leads and manuals. 2 section, 13 m triangular mast, \$50. Bob VK2CAN, QTHR, 02 9416 3727.

● HF receiver, 1.6 to 30 MHz, Alden weather fax, has U/L/SB, \$250. Tod VK2EZZ, 019 460 437.

● Apple II clone, extra RAM, 2 disks, 80 column card, with "Fairy" IC test interface card which identifies and tests 547400 and 54741S series TTL chips. \$100 the lot. Warwick VK2ZMS, QTHR, 02 9579 6656.

● Weller 50V soldering iron, brand new, boxed, \$25. Radio Theory Handbook by Swainston, 1st edition, fair condn, \$20. Internet starter kit by Microplay, brand new, never used, for Win-

dows 3.11, \$40 ONO. Small mobile ATU, good condn, \$25. WIA amateur log book, brand new, three for sale, \$5 each or 3 for \$10. Steve VK2SPS, QTHR, 02 4334 7743.

● Kenwood TS-520 txcvr, mic, manual, \$400. Oscarklock SWR-200 ATU with SWR Meter, \$90. Kenwood DG5 digital display, \$100. Kenwood TS-120S txcvr, \$400. Kenwood PS-30 heavy duty PSU, \$180. Aikawa PM-SH ATU with SWR Meter, \$30. Kenwood 7625 2 m txcvr, \$150. Icom IC-290H 2 m txcvr, \$200. Yaesu FT-411E 2 m hand held, \$150. Yaesu FT-757GX HF txcvr, \$500. Yaesu FT-757 heavy duty PSU, \$175. Yaesu FC-700 ATU, \$125. Yaesu FRG7 communications receiver, \$150. AEA PK232 multi-mode TNC, \$200. Computer (8088), twin 360 k floppies with program for PK232 (free with PK232). Epson LX 400 (DM) printer, \$50. Compaq Pentium 75 computer, 15 inch monitor, \$1250. Dynalink 28 kbyte modem, \$50. Kenwood PS-20 light duty PSU, \$100. Micronta PSU 12 V 5 A, \$35. Revex SWR/Power Meter, 144-500 MHz, \$75. Data Switch, serial with data LEDs, \$60. Trio dynamic mic, \$50. Fugiden 1 kW low pass filter, \$70. Palomar noise bridge, \$25. Oscarklock multimeter, \$20. Megger 250 V, \$75. Ribbon mic, \$80. EAT 300 ATU and SWR meter, \$100. Tokyo HCS90 high power ATU, \$80. Dwell tachometer, \$20. AWA Voltobyst Type A56016. Leader LSG11 signal generator, \$75. Mode 110 SWR/Power meter, \$30. Simplex Morse key, \$30. Tech TE15 GDO, \$75. Realistic speaker for TRX, \$10. MPJ SWR wattmeter, \$80. Frank VK2ADU, 02 4237 7443.

● Yaesu FT-767GX CAT, HF, 6 m, 2 m, 70 cm, all mode, in-built power supply, in-built ATU, digital SWR meter, digital power meter, all mode squelch, good condition, \$1500. Frank VK2XVI, QTHR, 02 4933 3760 (4-8 pm).

● HP Vectra PCs, 1 x 486, 7 x 386, 1 x 286, various configurations, some with VGA monitor, price range of \$190 to \$30. John VK2WVW, 02 9546 1927.

● Yaesu FT-736R VHF/UHF all mode txcvr, 6 m/2 m/70 cm, full satellite and duplex operation, excellent condn, \$1600. Yaesu FT-26R 2 m hand held txcvr, spkr/mic, charger, dry cell pack, VGC, \$220. Yaesu FT-101E HF txcvr, 160 - 10 m, mic, DC leads, VGC, \$350. Chris VK2YMW, QTHR, 02 9487 2764.

● Kantronics Communicator 3 packet TNC, as new condn, all documentation plus Manhattan data transfer switch and cables to enable selection of either of two TNCs/modems, etc, \$150. Sid VK2SW, QTHR, 02 6922 6082.

● Yaesu FT-100MP HF DSP txcvr, \$3200. Yaesu FT-2400 2 m txcvr, \$350. Yaesu FT-212RH 2 m txcvr, \$250. PK 232 MBX, \$250. Multi tri-bander beam, very compact, \$200. Emtron EAT-300A ATU, \$200. Icom SM5 desk mic, \$60. Kenwood TM-241A 2 m txcvr, \$280. Bruce VK2WVW, 02 6331 1188.

FOR SALE VIC

- **Towers.** Two section wind-up, 50 ft, guyed mast, \$150. Three piece wind-up, guyed, 45 ft mast, suitable for wire antennas, etc, \$100. Les VK3MF, QTHR, 03 5422 2860.
- **13.8 V, VK PowerMaster 35 A PSU, \$300.** Goldstar OS-9040D Dual Beam CRO, \$700. MFJ 259 HF/VHF SWR analyser, \$250. MFJ 219 UHF SWR analyser, \$150. Ramsey FM 2 m txcvr base rig, \$150. Eleenco RF signal generator, 110 kHz to 150 MHz with digital readout, \$450. Tuck VK3CCA, Tuck@sci.monash.edu.au
- **Yaesu FT-703ZD Mk II HF txcvr, WARC bands, s/n ON230712, with FV-101DM external VFO, FM board, MB-188 mix with VFO scanning, operating and full service manuals, EC, \$650.** Icom IC-2W2 2 m/70 cm handheld, mint condn, s/n 12371, with cable, pouch, UT-63 tone squelch, 5 W, 62 memories, \$400. Bob VK3BRF, QTHR, 03 9878 6653.
- **Yaesu FT-470 dual-band 2 m/70 cm handheld, desk top charger, spare battery pack, head set with boom mic, speaker/mic, spare high gain dual band whip, car adapter, leather case, \$450.** Kenwood TS-680S all mode multi-band HF/VHF txcvr, with Entron cross needle 30 A PSU, \$1450. Martin VK3AJ, QTHR, 03 9789 9196.
- **AEA Pakratt 323MBX multimode data controller with manuals, brand new, never been used, \$200.** Ian VK3SH, QTHR, 03 9876 4990, ianj@bigpond.com.au
- **Icom R72 receiver, 250 kHz to 29.9 MHz, all mode, \$850.** MFJ 941 Versa Tuner, cross needle SWR, as new, \$150. Yaesu FT-757 txcvr, EC, as new, \$900. TenTec Scout 555 txcvr with band plug-ins, \$600. Cushcraft 13 el, long boom, 2 m beam, EC, \$150. Cushcraft 20 el, long boom, 70 cm Yagi, \$125. TenTec Omni-VI txcvr, latest model, 24 poles of filtering, pass band tuning, DSP audio filtering, top performer, original list price \$5200, accept \$2200. Home brew 10 el 2 m beam, \$25. 20 m quarter wave vertical (ground mounting) with radials, EC, \$45. 25 lengths new 10 mm OD aluminium heavy wall tubing 1200 mm long, excellent for beam construction, \$30 the lot. Harold VK3AFQ (on behalf of vendor), 03 9596 2414 anytime.
- **Icom IC2SAT 2 m HT, s/n 6186, extended Rx, c/w BC84 HD battery pack and BC72 desk-top charger, manuals, all as new, \$300.** Brian VK3KQB, QTHR, 03 5453 1300.
- **Kenwood TS-940SAT deluxe HF txcvr, EC, \$1600.** MFJ-784B DSP filter, cost \$500, sell \$200. JPS DSP filter, EC \$150. ARRL Handbooks, 1957/61/67/70/77/78/85/88, \$10 each. Icom PS-15 20 A PSU, \$150. Leader LSG 10 signal generator, EC, \$25. Ron VK3OM, QTHR, 03 5944 3019.
- **Kenwood TS520S, ext VFO 520S, MC50c mic, near new, 6146B finals, excellent working order, \$525 ONO.** Brainer 2 m base vertical antenna, VGC, \$150. Rita VK3NRT, QTHR, 03 9798 3248.
- **Free Electronics Australia/Radio and Hobbies,** most years complete, about 250 copies, four boxes in one lot, pick up from Endeavour Hills. Stan VK3AYF, QTHR, 03 9700 4903.
- **Icom IC-736 HF/6 m 100 W txcvr, excellent condn with manuals and original packing boxes, \$2200 ONO.** Ian VK3AQ, 03 5751 1631 (AH), 0418 579 422 (AH), or lorian@albury.net.au.

FOR SALE QLD

- **Coaxial relay, SPDT (changeover) contacts, precision "N" connectors, new, unused, \$50.** Plate

blocking capacitor, 3300 pF 20 kVW, silver plated 8 mm screw connections supplied, new, unused, \$25. John VK4KK, QTHR, 07 3269 6647

- **UHF transmitter, 100 W, two 4CX250 tubes each with tuneable resonator/cavity, decent blower, directional coupler for FWD and RFL power metering, rack mount, ex DCA, 240 V AC, circuits, suit 70 cm, \$100.** Power supply with HT transformer 1400 V CT, HV diode rectifier stack, suit line amplifier, \$30. Gary VK4AR, 07 3353 1695.

- **Kenwood TS-140S/680S service manual, \$15.** Kenwood YK-455-C1 CW filter, \$50. Ray VK4BLK, 07 4939 2284.

FOR SALE SA

- **Kenwood TS 811-B, all mode 70 cm 25 W base txcvr, MGF1302 pre-amp, s/n 5100306, \$800 ONO.** Kenwood TR-9000, all mode 2 m 10 W mobile txcvr, s/n 1023123, \$375 ONO. David VK5JK, 08 8281 8172, technolt@arcom.com.au

FOR SALE WA

- **Cushcraft RS vertical antenna, 14-30 MHz incl WARC bands, \$225 plus freight.** Alec VK6BEB, QTHR, 08 9841 7773.
- **Yaesu FT-902DM HF txcvr, S/N OM 160409, 100 W, HF including WARC bands.** Digital display, in-built AC power supply or DC operation, complete with operating and workshop manuals and two sets of spare tubes, ex deceased estate VK6CN, \$600 ONO. Don VK6HK, QTHR, 08 9446 2864.

WANTED NSW

- **Radio Handbook Wm Orr 16th Edition (1964 or thereabouts).** Ten-Tec 544 txcvr. Paddle Key. Ray VK2FW, QTHR, 02 6365 3410.
- **VHF converter for Kenwood R2000 receiver.** Michael VK2HZM, 02 4759 1421, 0419 591 421, md@pmc.com.au
- **Factor modem, or information on upgrading PK232MBX 1991 firmware for pactor.** Ted VK2EZQ, 019 460 437.
- **AWA A410 signal generator test set either high or low band, any condn.** W B Weiley VK2AZW, QTHR, 02 4984 2419.
- **JRC NRD-50S, 51S, or 52S receiver.** Bruce VK2WWW, 02 6331 1188.

WANTED VIC

- **3N201 double gate FET transistor.** Willem VK3BTQ, QTHR, 03 9750 5701.
- **Meter for AVO model CT160 valve tester.** Ian VK3SH, QTHR, 03 9876 4990, ianj@bigpond.com.au

WIA MORSE PRACTICE TRANSMISSIONS

VK2BWI
VK2RCW

Nightly at 2000 local on 3550 kHz
Continuous on 3699 kHz and 144.950 MHz
5 wpm, 8 wpm, 12 wpm

VK3COD

Nightly (weekdays) at 1030 UTC on 28.340 MHz and 147.425 MHz

VK3RCW

Continuous on 145.650 MHz, 5 wpm, 10 wpm

VK4WIT

Monday at 0930 UTC on 3535 kHz

VK4AV

Thursday at 0930 UTC on 3535 kHz

VK4WIS

Sunday at 0930 UTC on 3535 kHz

VK5AWI

Nightly at 2030 local on 3550 kHz

VK5VF

Continuous on 145.650 MHz, 5 wpm to 12 wpm

VK6RCW

Continuous on 147.375 MHz, 3 wpm to 12 wpm

- **Old valve radios, complete, or anything with salvageable parts, cabinets, valves, etc.** Graeme VK3JGL, QTHR, 03 5443 8999, vk3jgl@ruralnet.net.au

- **Outdoor CW filter, MFJ CWF2BX or similar, circa 1978-80, to narrow CW on FT-7, pay fair price, re-imburse phone or postage costs, details to Ken VK3BXN, QTHR, 03 9528 6527.**

WANTED QLD

- **Eimac 3-500Z tube or pair of same, good price for good tube(s).** John VK4KK, QTHR, 07 3269 6647.
- **2SC2694 RF power transistors, as used in DSE 144 MHz linear.** Dow Key coax relays. Ray VK4BLK, 07 4939 2284.

WANTED SA

- **Yaesu FC-102 ATU and FAS-1 remote antenna switch.** Gary VK5DX, 0419 815 479.
- **Kenwood SW-100 mobile SWR/power meter (or similar).** Front panel separation kit for Yaesu FT-747 HF mobile rig, as recently cleared by DSE. Kevin VK5KJ, 08 8725 9248 (AH).
- **Tektronix ISI sampling unit, suits the 500 series of CRO.** C S Rateliff VK5ZST, 08 8520 2988.

WANTED TAS

- **Yaesu FT-901 mains power transformer.** Yaesu FV-101Z ext VFO. Frank VK7BC, QTHR, 03 6330 1379.
- **Mode switch to suit Yaesu FRG-7.** Has anyone got a new one in their junkbox. Please. Wayne L70137, 03 6343 5700.

WANTED NT

- **Icom IC-3210A txcvr owner handbook, photocopy acceptable, will pay costs.** Phil VK8NPL, PO Box 37315, Winnemille NT 0821, 08 8981 1591, pjlong@socia1.net.au

MISCELLANEOUS

- **The WIA QSL Collection (now Federal) requires QSLs.** All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose VIC 3765, tel 03 9728 5350.
- **If you got your licence before 1973 you are invited to join the Radio Amateurs Old Timers Club.** A \$2.50 joining fee plus \$5.00 per year gets you two interesting Journals plus good fellowship. Arthur Evans VK3VQ or Milton Crompton VK3MN can supply applications forms. Both are QTHR in any Call Book. ar

WIA Division Directory

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually in their residential State or Territory, and each Division looks after amateur radio affairs within its area.

Division	Address	Officers	Weekly News Broadcasts	1998 Fees
VK1 ACT Division GPO Box 600 Canberra ACT 2601	President: Hugh Blommings Secretary: John Woolner Treasurer: Les Davey	VK1YYZ VK1ET VK1LD	3.570 MHz LSB, 143.950 MHz FM each Sunday evening commencing at 8.00 pm local time. The broadcast text is available on packet, on Internet www.amsat.org and on the VK1 Home Page http://www.vk1.org.au	(F) \$72.00 (G) \$158.00 (X) \$44.00
VK2 NSW Division 109 Wigram St Parramatta NSW (PO Box 1066 Parramatta 2124) Phone 02 9688 2417 Freecall 1800 617 644 Fax 02 9633 1525	President: Michael Corbin Secretary: Eric Fossey Treasurer: Eric Van De Weyer (Office hours Mon-Fri 11.00-14.00) Web: http://marconi.mpcce.mq.edu.au/wia e-mail address: vk2wa@ozemail.com.au Packet BBS: VK2WI on 144.950 MHz	VK2YC VK2EY VK2KUR	From VK2WI 1.845, 3.695, 7.148*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.125, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup aus.radio.amateur.misc , and on packet radio.	(F) \$69.00 (G) \$158.00 (X) \$41.00
VK3 Victorian Division 408 Victory Boulevard Ashburton VIC 3147 Phone 03 9885 9261 Fax 03 9895 9298	President: Jim Linton Secretary: Barry Wilton Treasurer: Rob Hailey (Office hours Tue & Thur 0830-1530) e-mail address: vk3w@gnr.com.au Web: http://www.tbss.com.au/~wilaic/	VK3PC VK3XV VK3NC	VK3BWI broadcasts on the 1st Sunday of the month, starts 10.30 am. Primary frequencies, 3.615 LSB, 7.085 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3WV on Victorian packet BBS and VWA VIC Web Site.	(F) \$75.00 (G) \$158.00 (X) \$47.00
VK4 Queensland Division GPO Box 638 Brisbane QLD 4001 Phone 07 5496 4714	President: Colin Gladstone Secretary: Peter Harding Treasurer: Alistair Elrick e-mail address: wiaq@brisbane.dialix.com.au Web: http://www.wiaq.powerup.com.au	VKAAG VKAJPH VK4FTL	1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 14.342 MHz SSB, 21.175 MHz, 28.400 MHz SSB, 29.220 MHz FM, 53.725 MHz FM, 147.000 MHz FM, 438.500 MHz (Brisbane only), and regional VHF/UHF repeaters at 0900 hrs EAST Sunday. Repeated on 3.805 MHz SSB & 147.000 MHz FM at 1930 hrs EAST Monday. Broadcast news in text form on packet under WIAQ@VKNET.	(F) \$74.00 (G) \$160.00 (X) \$46.00
VK5 South Australian Division 34 West Thebarton Rd Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone 08 8352 3428 Fax 08 8254 0463	President: Ian Hunt Assistant Secretary: Graham Wiseman Treasurer: Joe Burford Web: http://www.vk5sw.amspr.org/	VK5QX VK5EU VK5UJ	1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.700 FM Mid North, 146.800 FM Mildura, 146.825 FM Barossa Valley, 146.900 FM South East, 146.925 FM Central North, 147.825 FM Gawler, 438.425 FM Barossa Valley, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.095 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday, 3.585 MHz and 146.675 MHz FM Adelaide, 1930 hrs Monday.	(F) \$75.00 (G) \$158.00 (X) \$47.00
VK6 West Australian Division PO Box 10 West Perth WA 8972 Phone 08 9351 8873	President: Wally Howse Secretary: Christine Baslin Treasurer: Bruce Hedland-Thomas Web: http://www.farc.com.au/~vk6sw/ e-mail: vk6sw@farc.com.au	VK6KZ VK6ZLZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 1.625, 3.560, 7.075, 14.116, 14.175, 21.185, 29.680 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.350(R) Busselton and 146.900(R) Mt William (Bunbury). Broadcast repeated on 146.700 at 1900 hrs Sunday, relayed on 1.865, 3.563 and 438.525 MHz; country relays on 146.350 and 146.900 MHz.	(F) \$82.00 (G) \$160.00 (X) \$34.00
VK7 Tasmanian Division PO Box 271 Riverside TAS 7250 Phone 03 6327 2096 Fax 03 6327 1738	President: Ron Churcher Secretary: Paul Gooden Treasurer: John Klop Web: http://www.tasnet.net	VK7RN VK7KPG VK7KCC	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.825 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart), repeated Tues 3.590 at 1930 hrs.	(F) \$74.00 (G) \$160.00 (X) \$46.00
VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz). Note: All times are local. All frequencies MHz.				
			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)	Three-year membership available to (F) (G) (X) grades at fee x 3 times.

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